

# SERVICE MANUAL

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STEREO VIDEO  
CASSETTE RECORDER

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BASIC VIDEO MECHANISM : D-33  
(6721R-0152A)

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## SPECIFICATIONS

Video recording system	Rotary 2 head helical scanning system	Channel coverage	VHF-low: C02 to C04, C13 to C20, S01 to S07 (CATV)
Video head	Double azimuth 4 heads		VHF-high: C05 to C12, S08 to S41 (CATV)
Tuner system	Frequency synthesized tuner		UHF: C21 to C71
TV system	B/G		1.0 Vp-p, 75 ohm, unbalanced
Video signal system	PAL color signal, 625 lines, 50 fields	Video input	1.0 Vp-p, 75 ohm, unbalanced
Usable cassettes	VHS video cassettes	Video output	240 lines (SP)
Recording/playback time	PAL/MESECAM	Horizontal resolution	43 dB (SP)
	SP: 5 hours max. with E-300 tape.	Video S/N	3 tracks (Hi-Fi sound 2 tracks, Normal sound 1 track)
	LP: 10 hours max. with E-300 tape	Audio track	
	NTSC (Playback only)		SCART: -5 dBs, more than 10 k ohm
	SP: 3 hours 30 minutes max. with T-210 tape	Audio input	SCART: -5 dBs, less than 1 k ohm
	LP: 7 hours max. with T-210 tape	Audio output	20 Hz - 20 kHz
	EP: 10 hours 30 minutes max. with T-210 tape	Hi-Fi frequency response	More than 80 dB
		Hi-Fi dynamic range	Less than 0.01%(nominal)
Tape speed	PAL/MESECAM	Hi-Fi Wow & Flutter	
	SP: 23.39 mm/sec.	Operating temperature:	5 °C to 40 °C
	LP: 11.69 mm/sec.	Power requirements	200 - 240 V AC, 50 Hz
	NTSC (Playback only)	Power consumption	20 watts
	SP: 33.35 mm/sec.	Dimensions	TYPE 3.5 watts (power save mode.)
	LP: 16.67 mm/sec.		360 (W) x 278 (D) x 95 (H) mm (14 $\frac{1}{4}$ x 11 x 3 $\frac{3}{4}$ in.)
	EP: 11.12 mm/sec.	Weight	Approx. 3.4 kg (7.48 lbs.)
Rewind time:	Approx. 3 min. with E-180 tape		

• Design and specifications are subject to change without notice.

## ACCESSORIES LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	S8-35R-P00-50F		INSTRUCTION ASSY	5	S8-615-05R-000		CABLE ASSY
2	S7-11R-1P0-16E		REMOTE CONTROLLER A				
2	S7-12R-293-8GA		REMOCON RECEIVER				
3	S5-640-18B-000		PLUG ASSY PHONO CORD				
4	S8-610-33B-000		CABLE SET ASSY				

## DISASSEMBLY INSTRUCTIONS

### 1. Top Case Removal

1) Remove 4 screws holding the top case.

### 2. Panel Front Removal (see Fig. 1)

1) Release 7 tabs, and then remove the panel front.

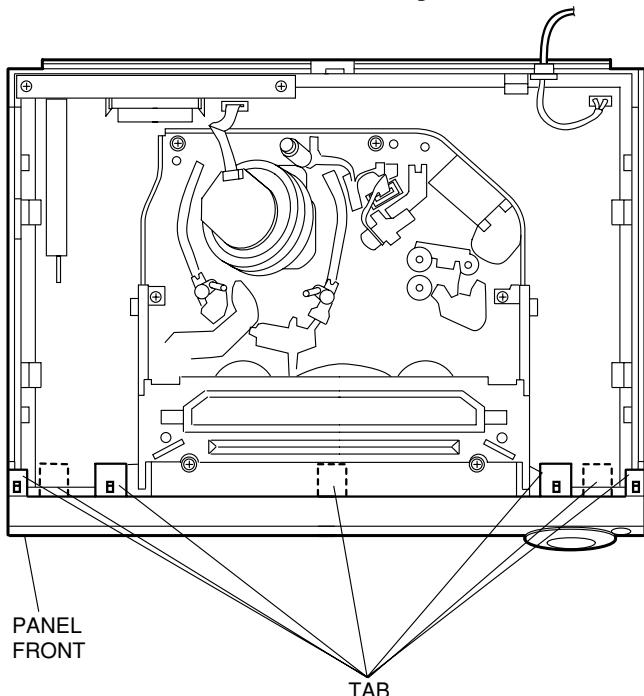


Fig. 1

### 3. Front-1 C.B. and Front-2 C.B. Removal (see Fig. 2)

- 1) Release 2 tabs, and then remove front-1 C.B. from the connector (PKM02) in the direction of arrow (1).
- 2) Release the tab, and then remove front-2 C.B. from the connector (PKM01) in the direction of arrow (2).

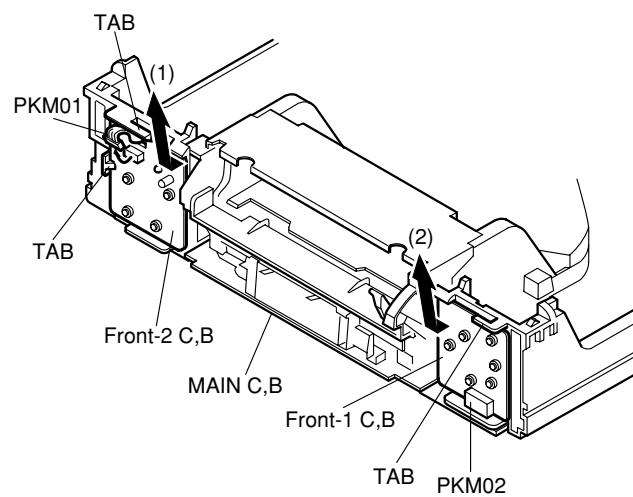


Fig. 2

### 4. Mechanism Removal (see Fig. 3)

- 1) Disconnect the drum FF cable from the connector (PMD01) on the Main C.B.
- 2) Disconnect the ACE head FF cable from the connector (P3D02) on the Main C.B.
- 3) Remove 6 screws (A).

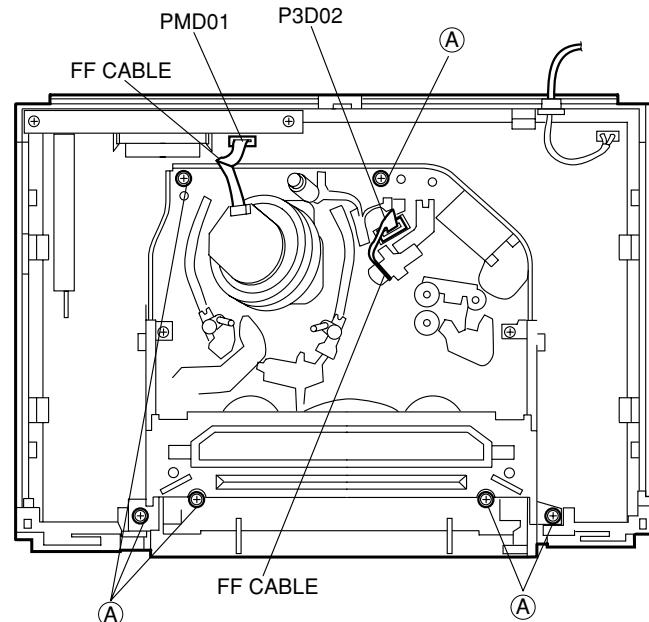


Fig. 3

### 5. Main C.B. Removal (see Fig. 4)

- 1) Remove 2 screws (B) holding the panel assy, distri-butor.
- 2) Release 5 tabs, and then simultaneously lift the panel assembly, distributor and Main C.B. to remove them.

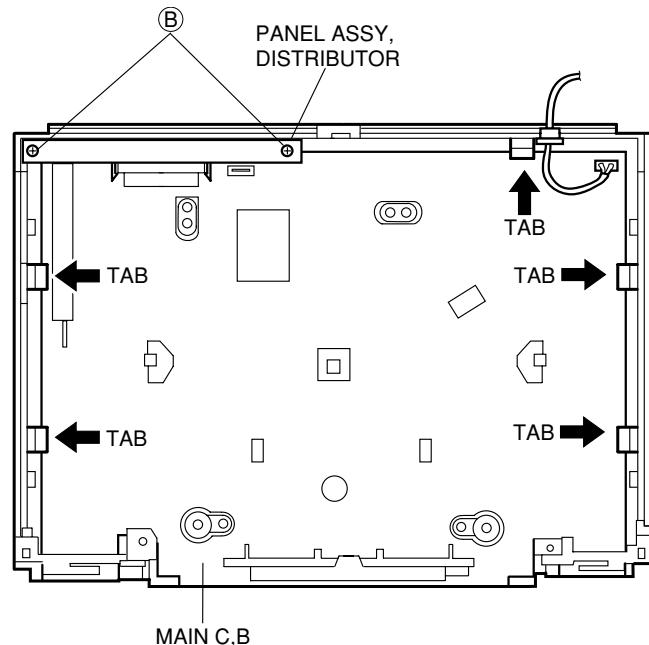
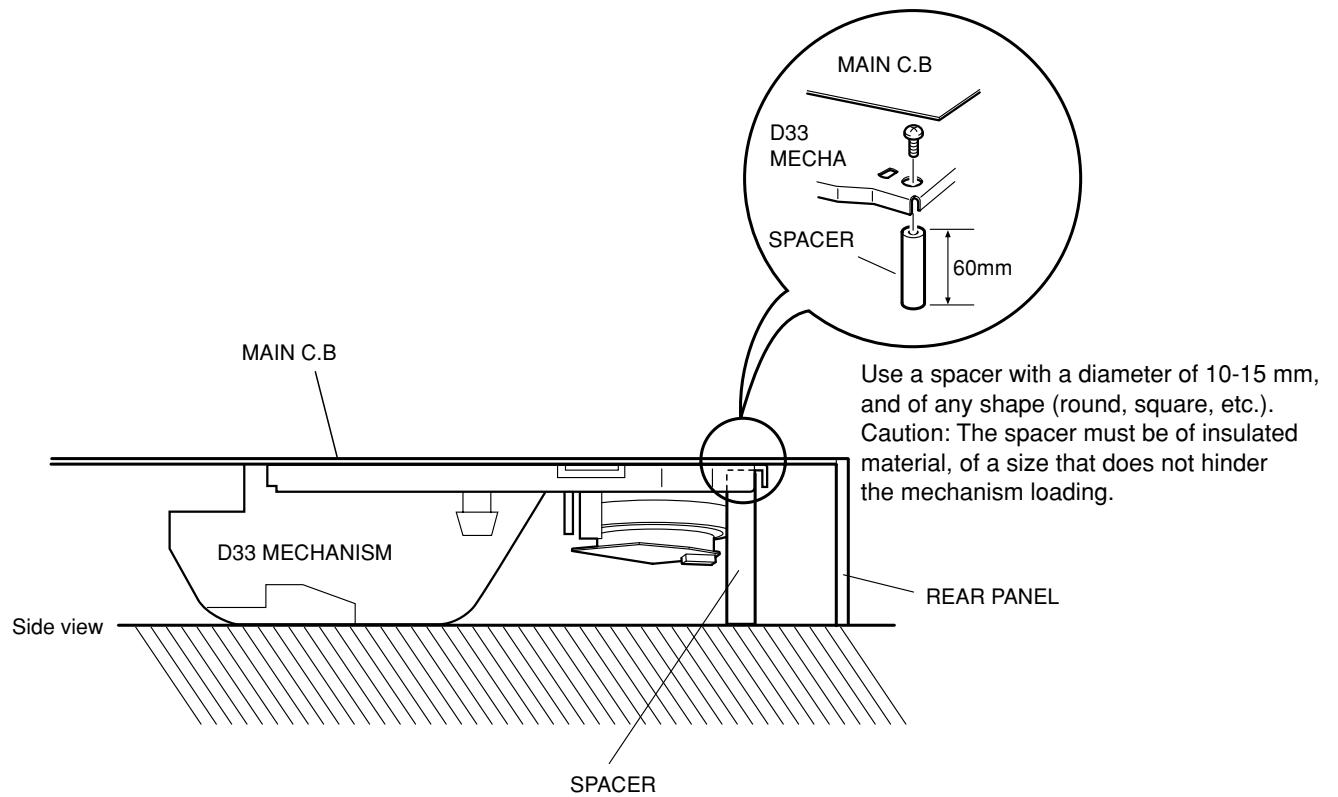


Fig. 4

## SERVICE POSITION

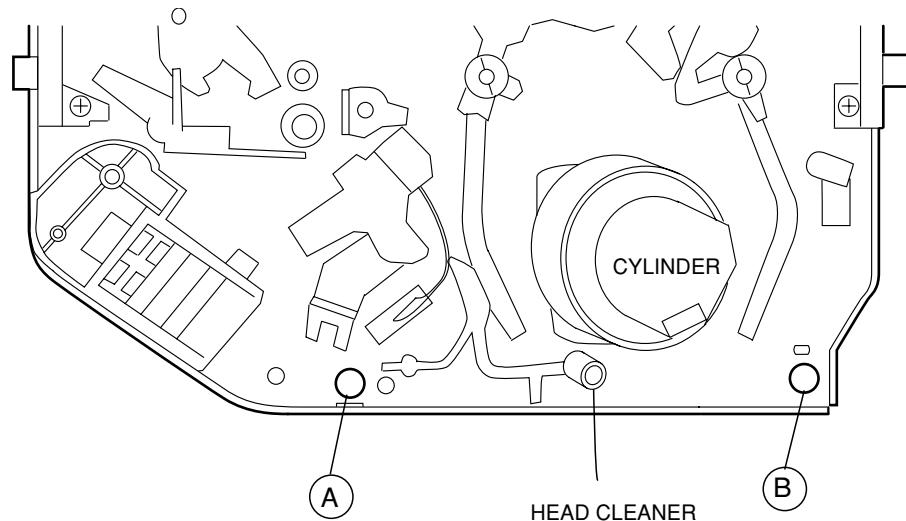
To set the mechanism to the service position in active status:

Insert a spacer as shown below: The service position can be set in the stable status without any defective contact.



### Location

Install spacers at locations (A) and (B).



D33 Mechanism Top View

## VCR TEST TAPE INTERCHANGEABILITY TABLE

There are two types of the new alignment tape CH-1B (for NTSC) and CH-2 (for PAL). On each tape four signals (1)-(4) are recorded for the times and in the order shown below.

(1) : 8min. → (2) : 2min. → (3) : 5min. → (4) : 5min.

The TTV-MP1 (for M-PAL), TTV-MS1 (for MESECAM) and TTV-S1 (for SECAM) alignment tapes have the same contents as the previous tapes.

Method	Now in use TYPE		New TYPE		Application
	Model	Contents *1	Model	Contents *1	
NTSC	TTV-N1	NTSC, Color bar, 1 kHz, SP	CH-1B(2)	NTSC, Stairsteps, 1 kHz, SP	PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-NS1	NTSC, Color bar, 1 kHz, SP	No Changed.		For S-VHS (SQPB) check
	TTV-N1E	NTSC, Color bar, 1 kHz, EP	CH-1B(4) *2	NTSC, Color bar, 1 kHz, EP	Switching position ADJ.
	TTV-NS6E	NTSC, Color bar, No sound, EP	No Changed.		For S-VHS (SQPB) check
	TTV-N2	NTSC, Stairsteps, 7 kHz, SP	CH-1B(1)	NTSC, Stairsteps, 7 kHz, SP	Head ACE Azimuth ADJ.
	TTV-N12 (SCV-1998)	NTSC, Color bar, 1 kHz, SP	CH-1B(4)	NTSC, Color bar, 1 kHz, EP	FM Envelope ADJ. X-Value ADJ.
	TTV-N6 (TTV-N06T)	NTSC, Mono scope, 7 kHz, SP	No Changed.		For total picture quality check (resolution, etc)
	TTV-N7A	NTSC, Stairsteps, 1 kHz, SP, HiFi 400 Hz	CH-1B(3)	NTSC, Color bar, No sound SP, HiFi 400 Hz	HiFi Audio PB Level ADJ.
PAL	TTV-P1	PAL, Color bar, 1 kHz, SP	CH-2 (2) * 3	PAL, Stairsteps, 1 kHz, SP	Switching position ADJ. PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-P1L	PAL, Color bar, 1 kHz, LP	CH-2 (4)	PAL, Color bar, 1 kHz, LP	Switching position. (LP Model) FM Envelope ADJ. (LP Model) X-Value ADJ. (LP Model)
	TTV-P2	PAL, Stairsteps, 6 kHz, SP	CH-2 (1)	PAL, Stairsteps, 6 kHz, SP	HEAD ACE Azimuth ADJ. FM Envelope ADJ. (SP Model) X-Value ADJ. (SP Model)
	TTV-P6 (TTV-N06T)	PAL, Monoscope, 6 kHz, SP	No Changed.		For total picture quality check (resolution, etc)
	TTV-P7	PAL, Stairsteps, 1 kHz, SP, HiFi 1 kHz	CH-2 (3)	PAL, Color bar, No sound SP, HiFi 400 Hz	HiFi Audio PB Level ADJ.
	TTV-P16	PAL, Color bar, 400 Hz, SP, HiFi 1 kHz	No Changed.		FM Filter ADJ.

\* 1. Described in the order of color format, video signal, linear audio, tape speed and Hi-Fi audio.

\* 2. Use CH-1B (1)-(3) with models used exclusively in the SP mode.

\* 3. Use CH-2 (3) and (4) when it is necessary to observe the chroma signal.

## ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C124	87-010-552-040	CAP, E 22-16V	
△	SI-SK6-153-00A	IC,STR-G6153T 5P		C151	87-015-698-080	CAP, E 4.7-50V	
△	S2-309-024-040	SENSOR LTV-817B PHOTO COU		C152	87-015-698-080	CAP, E 4.7-50V	
	S6-570-62B-000	SENSOR PC123Y		C153	87-015-698-080	CAP, E 4.7-50V	
	SI-SS4-310-00A	IC,KA431AZ		C156	87-015-681-080	CAP, E 10-16V	
	SI-KE4-310-00A	IC,KIA431 3P		C157	87-015-681-080	CAP, E 10-16V	
	SI-SA7-159-10A	IC,LA71591M		C159	87-015-681-080	CAP, E 10-16V	
	SI-GS3-977-57B	IC,GMS3977RAA57F		C303	87-015-695-080	CAP, E 1.0-50V	
	SI-HI3-977-17A	IC,HD3977RC17F		C304	87-016-088-040	CAP, E 220-6.3V	
	SI-SS3-082-00A	IC,KA3082		C310	87-015-698-080	CAP, E 4.7-50V	
	SI-AL2-416-00B	IC,AT24C16-10PC		C315	87-015-681-080	CAP, E 10-16V	
	SI-SS7-531-00A	IC,KA7531Z		C316	87-015-681-080	CAP, E 10-16V	
	SI-KE7-031-00A	IC,KIA7031P		C318	87-010-402-040	CAP, E 2.2-50V	
	SI-SS7-542-00A	IC,KA7542Z		C320	SC-N10-50K-948	CAP,1UF-50V	
	87-001-196-010	IC,KIA7042P		C322	87-010-078-080	CAP, E 47M-6.3V	
	87-A20-281-010	IC,MN12510		C323	87-010-078-080	CAP, E 47M-6.3V	
	87-A21-261-010	IC,MSP3417D		C325	SC-N10-50K-948	CAP,1UF-50V	
	SI-SA7-479-30A	IC,LC74793		C326	87-015-681-080	CAP, E 10-16V	
	SI-PH9-605-00A	IC,TDA9605H		C327	SC-N10-50K-948	CAP,1UF-50V	
	SI-RH7-635-00A	IC,BH7635S		C331	87-016-088-040	CAP, E 220-6.3V	
				C334	87-016-088-040	CAP, E 220-6.3V	
				C337	87-015-698-080	CAP, E 4.7-50V	
				C339	87-015-698-080	CAP, E 4.7-50V	
				C346	87-016-088-040	CAP, E 220-6.3V	
				C348	87-015-695-080	CAP, E 1.0-50V	
TRANSISTOR				C354	87-016-088-040	CAP, E 220-6.3V	
	ST-R32-030-9AA	TR,KTC3203-Y		C358	87-015-695-080	CAP, E 1.0-50V	
	S7-A30-293-010	TR,KTC2804-Y		C401	87-010-078-080	CAP, E 47M-6.3V	
	ST-R31-980-9AC	TR,KTC3198-TP-BL		C405	87-015-681-080	CAP, E 10-16V	
	S3-1KR-A10-3M0	TR,KRA103M-TP		C406	87-015-681-080	CAP, E 10-16V	
	ST-R70-900-9AE	TR,KSA709C-Y		C415	87-010-552-040	CAP, E 22-16V	
	ST-R12-680-9BA	TR,KTA1268-BL		C420	87-010-408-040	CAP, E 47UF-50V	
	ST-R12-730-9AA	TR,KTA1273-TP-Y		C423	87-015-698-080	CAP, E 4.7-50V	
	SK-RC1-01M-000	TR,KRC101M		C466	87-010-403-040	CAP, E 3.3-50V	
	ST-R31-990-9AF	TR,KTC3199-BL		C4A1	87-010-552-040	CAP, E 22-16V	
	ST-R12-670-9AC	TR,KTA1267-GR		C500	87-016-455-080	CAP, E 470UF-6.3V	
	ST-R10-300-9AE	TR,KRC103M		C502	87-010-078-080	CAP, E 47M-6.3V	
				C504	87-016-088-040	CAP, E 220-6.3V	
DIODE				C524	87-010-265-080	CAP, E 33-16V	
	87-070-173-010	DIODE,S1WBA60		C525	87-015-684-080	CAP, E 47-16V	
	SD-D01-000-9CA	DIODE,EG01CW		C526	87-016-130-080	CAP, E 47-25V	
	87-A40-284-080	DIODE,ERA22-10		C530	87-015-681-080	CAP, E 10-16V	
	SD-D01-000-9AC	DIODE,EU01W		C534	87-015-698-080	CAP, E 4.7-50V	
	87-020-215-010	DIODE,ERC81-004L22		C535	87-015-698-080	CAP, E 4.7-50V	
	SD-R18-020-9AA	DIODE,ERA18-02KFRB		C541	87-015-698-080	CAP, E 4.7-50V	
	87-070-112-060	DIODE,RU4YX-LF		C546	87-015-684-080	CAP, E 47-16V	
	87-020-465-080	DIODE,ISS1L33		C561	87-010-078-080	CAP, E 47M-6.3V	
	87-017-011-080	DIODE,IN4003A		C588	87-015-698-080	CAP, E 4.7-50V	
				C5F7	87-010-078-080	CAP, E 47M-6.3V	
MAIN C.B				C5F8	87-010-078-080	CAP, E 47M-6.3V	
	BC101	S6-360-04C-000	COIL,BFS3550R2FD8	C701	87-015-698-080	CAP, E 4.7-50V	
	BC102	S6-360-04C-000	COIL,BFS3550R2FD8	C702	87-015-681-080	CAP, E 10-16V	
	BC905	S6-360-04C-000	COIL,BFS3550R2FD8	C703	87-015-698-080	CAP, E 4.7-50V	
	BC907	S6-360-04C-000	COIL,BFS3550R2FD8	C704	87-010-078-080	CAP, E 47M-6.3V	
△C101	S6-240-88F-000	CAP,0.1UF-275V		C706	87-016-577-080	CAP, E 470UF-16V	
△C102	S6-240-88F-000	CAP,0.1UF-275V		C713	87-010-078-080	CAP, E 47M-6.3V	
△C103	S0-2TF-H68-0M0	CAP,E 68U-400V		C7M2	87-015-684-080	CAP, E 47-16V	
△C105	87-016-375-010	CAP,0.01UF-630V		C7V1	87-015-684-080	CAP, E 47-16V	
△C106	S6-240-87B-000	CAP,100P-1KV		C7V2	SC-N10-50K-948	CAP,1UF-50V	
C109	87-010-982-040	CAP,E 33UF-25V		C7V6	87-015-698-080	CAP, E 4.7-50V	
△C112	87-012-379-010	CAP,3300PF-400V		C7V7	87-015-695-080	CAP, E 1.0-50V	
△C113	SA-1B3-0KH-2M0	CAP,220PF-400V		C7V8	87-015-695-080	CAP, E 1.0-50V	
C115	87-010-408-040	CAP,E 47UF-50V		C806	87-015-698-080	CAP, E 4.7-50V	
C116	87-010-237-910	CAP,E 1000UF-16V		C807	87-015-698-080	CAP, E 4.7-50V	
C117	87-016-577-080	CAP,E 470UF-16V		C810	87-015-681-080	CAP, E 10-16V	
C118	87-010-248-080	CAP,E 220-10V		C811	87-015-681-080	CAP, E 10-16V	
C119	87-010-408-040	CAP,E 47UF-50V		C813	87-015-681-080	CAP, E 10-16V	
C120	87-010-387-010	CAP,E 470UF-25V KME		C814	87-015-681-080	CAP, E 10-16V	
C121	87-010-387-080	CAP,E 470UF-25V		C815	87-015-681-080	CAP, E 10-16V	
C123	87-010-078-080	CAP,E 47M-6.3V					

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C816	87-015-681-080	CAP,E 10-16V		L926	87-003-152-080	INDUCTOR,100M 2.3-3.4-5	
C817	87-015-681-080	CAP,E 10-16V		L941	87-005-696-080	COIL,100UH	
C818	87-015-698-080	CAP,E 4.7-50V		LD501	S9-31R-001-7A0	LED	
C819	87-015-681-080	CAP,E 10-16V		MS501	S6-00R-PY0-01B	SW,MMS00420ZMBO MIC	
C821	87-015-684-080	CAP,E 47-16V		P3D01	S5-612-34W-000	CONN,10P	
C822	87-015-681-080	CAP,E 10-16V		P3D02	S6-30R-5S0-08E	CONN,6P	
C823	87-015-681-080	CAP,E 10-16V		P3D03	S5-612-51B-000	CONN,2P	
C824	87-015-681-080	CAP,E 10-16V		PKM01	S5-610-36D-000	CONN,5P	
C825	87-015-684-080	CAP,E 47-16V		PLM02	S5-618-44J-000	TUC-P10X-B1, TAIKO B-B 10 P	
C827	87-015-681-080	CAP,E 10-16V		PMC01	S6-30R-2P0-05C	CONN,8P	
C828	87-015-684-080	CAP,E 47-16V		PMD01	S5-612-34V-000	CONN,7P	
C832	87-010-078-080	CAP,E 47M-6.3V		PMK01	S6-724-34B-000	CONN,5P	
C835	87-010-400-080	CAP,E 0.47-50V		PMK02	S5-618-43J-000	CONN,TUC-P10P	
C902	87-016-577-080	CAP,E 470UF-16V		PML01	S6-30R-2S0-11A	CONN,2P	
C912	87-016-577-080	CAP,E 470UF-16V		▲PW101	S5-612-92B-000	GP390 LGC 3P STRAIG P	
C941	87-015-681-080	CAP,E 10-16V		▲R101	S6-140-07R-000	RES,2.7-2W	
C942	87-010-132-080	CAP,E 1.0-50V		▲R102	SR-S10-03K-619	RES,100K-2W	
C948	87-015-681-080	CAP,E 10-16V		▲R104	SR-S56-02K-619	RES,56K-2W	
C950	87-015-681-080	CAP,E 10-16V		▲R109	SR-S03-50K-619	RES,0.35-2W	
C951	87-015-684-080	CAP,E 47-16V		R524	SR-F06-81J-619	RES,6.8-1W	
CS501	S6-00R-DB0-04B	SW SPPB62042 5V		R/C5F1	S7-12R-293-8GA	REMOCON RECEIVER	
CS501	S6-00R-DB0-04C	SW,MPU10252MLB4 MIC		RS501	S5-00R-AB0-02A	SENSOR GP1S566	
DIG5F1	S3-02R-1N0-03A	DH 9MT168GK		RS502	S5-00R-AB0-02A	SENSOR GP1S566	
DIG5F1	S3-02R-2N0-03A	DH SVV09MM14		▲T101	S6-420-23M-000	TRANS EER2828	
ES501	S9-31R-001-6A0	SENSOR END		TL401	S6-330-32K-000	COIL,OSC BIAS 1CHIP 5V	
ES502	S9-31R-001-6A0	SENSOR END		TU701	S7-00R-P3L-02E	TADC-G006D LGC&D G/K/I H ITU	
▲F101	S5-850-11T-000	FUSE,1600MA 250V		TU701	S7-00R-P3G-01E	TCMK0601PD08C SS G/K/I H ITU	
▲F101	S5-850-11C-000	FUSE,T 1.6A 250V		VR501	S6-130-32W-000	SFR,RH0638CJ5R (220K)	
▲F103	87-001-196-010	ICP-N10 T104		X301	S2-02R-144-3AC	X' TAL, 4.433709M	
▲FH01	S5-860-08B-000	FUSE CLUMP		X301	S2-02R-144-3AD	X' TAL, 4.433709M	
▲FH02	S5-860-08B-000	FUSE CLUMP		X301	S2-02R-144-3AE	X' TAL, 4.433709MHZ 15PPM	
JK901	S6-20R-M00-02A	JACK 42P		X501	S2-02R-310-01F	X' TAL, 10.0000	
JK902	S5-720-36H-000	JK BJP		X501	S2-02R-310-01E	X' TAL, 10.0000MHZ	
▲L102	S6-161-45H-000	FILTER SHT LFS2020V4-04350		X502	S5-290-01B-000	X' TAL, 32.768KHZ	
▲L102	S6-161-45J-000	FL BUJEON V-04350		X502	S5-290-01K-000	X' TAL, 32.768KHZ	
L103	S6-330-88G-000	COIL,CHOCK TP 5MM		X503	S2-02R-317-71F	X' TAL, 17.7344	
L104	S6-330-88G-000	COIL,CHOCK TP 5MM		X503	S2-02R-317-71E	X' TAL, 17.734476MHZ	
L105	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		X5F1	S6-180-10B-000	X' TAL, 4MHZ	
L301	87-005-196-080	COIL,10UH		X7V1	S2-02R-317-71F	X' TAL, 17.7344	
L302	87-003-286-080	COIL,56 2.3-3.4-5		X7V1	S2-02R-317-71E	X' TAL, 17.734476MHZ	
L303	87-003-148-080	INDUCTOR,33		ZD104	83-NEG-677-080	DIODE,MTZ5.6B	
L304	87-005-696-080	COIL,100UH		ZD151	SD-Z13-000-9AA	ZENER,MTZ13A	
L307	87-005-696-080	COIL,100UH		ZD152	87-A40-345-080	ZENER,MTZ10-C	
L308	87-003-282-080	COIL,12 2.3-3.4-5		ZD153	SD-Z13-000-9AA	ZENER,MTZ13A	
L309	87-005-696-080	COIL,100UH		ZD501	SM-TZ6-8CT-000	ZENER,MTZ6.8C	
L401	87-003-145-080	INDUCTOR,8.2		ZD503	83-NEG-678-080	ZENER,MTZ6.2B	
L402	87-003-129-080	INDUCTOR,6800		ZD5F1	SD-Z51-000-9HA	ZENER,MTZ5.1B 0.5W	
L405	87-005-196-080	COIL,10UH		ZD701	87-002-743-080	ZENER,MTZ33B	
L502	87-005-696-080	COIL,100UH		ZD801	83-NEG-677-080	DIODE,MTZ5.6B	
L505	87-005-696-080	COIL,100UH		ZD802	SD-Z13-000-9AA	ZENER,MTZ13A	
L506	87-005-686-080	COIL,15UH		ZD805	SD-Z51-000-9HA	ZENER,MTZ5.1B 0.5W	
L507	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		ZD806	SD-Z51-000-9HA	ZENER,MTZ5.1B 0.5W	
L5S1	87-003-148-080	INDUCTOR,33		ZD807	SD-Z13-000-9AA	ZENER,MTZ13A	
L701	87-005-696-080	COIL,100UH		NICAM C.B			
L702	87-005-196-080	COIL,10UH		C752	87-015-684-080	CAP,E 47-16V	
L703	87-005-196-080	COIL,10UH		C753	87-015-684-080	CAP,E 47-16V	
L704	87-003-145-080	INDUCTOR,8.2		C760	87-015-684-080	CAP,E 47-16V	
L705	87-005-196-080	COIL,10UH		C761	87-010-403-040	CAP,E 3.3-50V	
L7V1	87-005-696-080	COIL,100UH		C763	87-015-681-080	CAP,E 10-16V	
L801	87-005-696-080	COIL,100UH		C765	87-015-684-080	CAP,E 47-16V	
L802	87-005-696-080	COIL,100UH		C773	87-015-681-080	CAP,E 10-16V	
L901	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		C774	87-015-681-080	CAP,E 10-16V	
L902	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		C775	87-015-681-080	CAP,E 10-16V	
L904	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		C776	87-015-681-080	CAP,E 10-16V	
L906	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		L752	87-005-696-080	COIL,100UH	
L911	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		L753	87-005-696-080	COIL,100UH	
L912	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		L754	87-003-129-080	INDUCTOR,6800	
L914	87-003-152-080	INDUCTOR,100M 2.3-3.4-5		L755	87-003-129-080	INDUCTOR,6800	
L916	87-003-152-080	INDUCTOR,100M 2.3-3.4-5					
L924	87-003-152-080	INDUCTOR,100M 2.3-3.4-5					

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
P7M51	S5-618-48D-000		CABLE 6P
P7M52	S5-618-48F-000		CABLE 9P

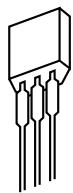
FRONT-1 C.B

PMK02	S5-618-44J-000	CONN,10P
SW5A1	S5-562-82C-000	SW,SKQNQED ALPS 5MM
SW5A2	S5-562-82C-000	SW,SKQNQED ALPS 5MM
SW5A3	S5-562-82C-000	SW,SKQNQED ALPS 5MM
SW5A4	S5-562-82C-000	SW,SKQNQED ALPS 5MM
SW5A5	S5-562-82C-000	SW,SKQNQED ALPS 5MM
SW5A6	S5-562-82C-000	SW,SKQNQED ALPS 5MM
X751	S5-290-219-000	X'TAL 18.432MHZ

FRONT-2 C.B

LD5A1	SD-L53-110-0AA	LED,SG5311(GRN)
PMK01	S5-610-36D-000	CONN,5P
SW5A0	S5-562-82C-000	SW,SKQNQED ALPS 5MM
SW5A7	S5-562-82C-000	SW,SKQNQED ALPS 5MM
SW5A8	S5-562-82C-000	SW,SKQNQED ALPS 5MM
SW5A9	S5-562-82C-000	SW,SKQNQED ALPS 5MM

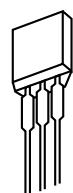
## TRANSISTOR ILLUSTRATION



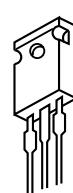
E C B



E C B



E C B



E C B

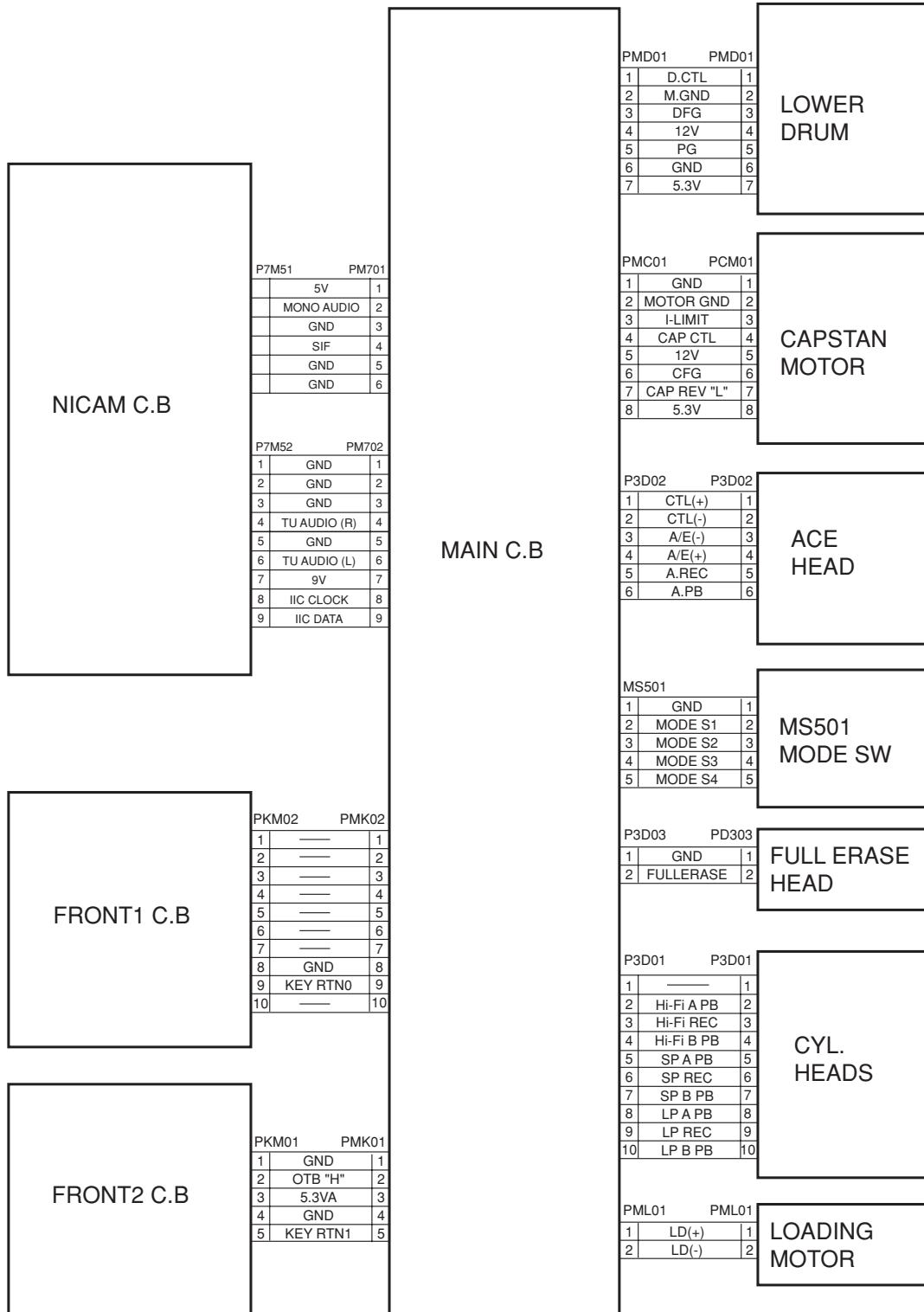
KRA103M  
KRC101M  
KRC103M  
KTA1267  
KTC3198  
KTC3199

KSA709  
KTA1268  
KTC3203

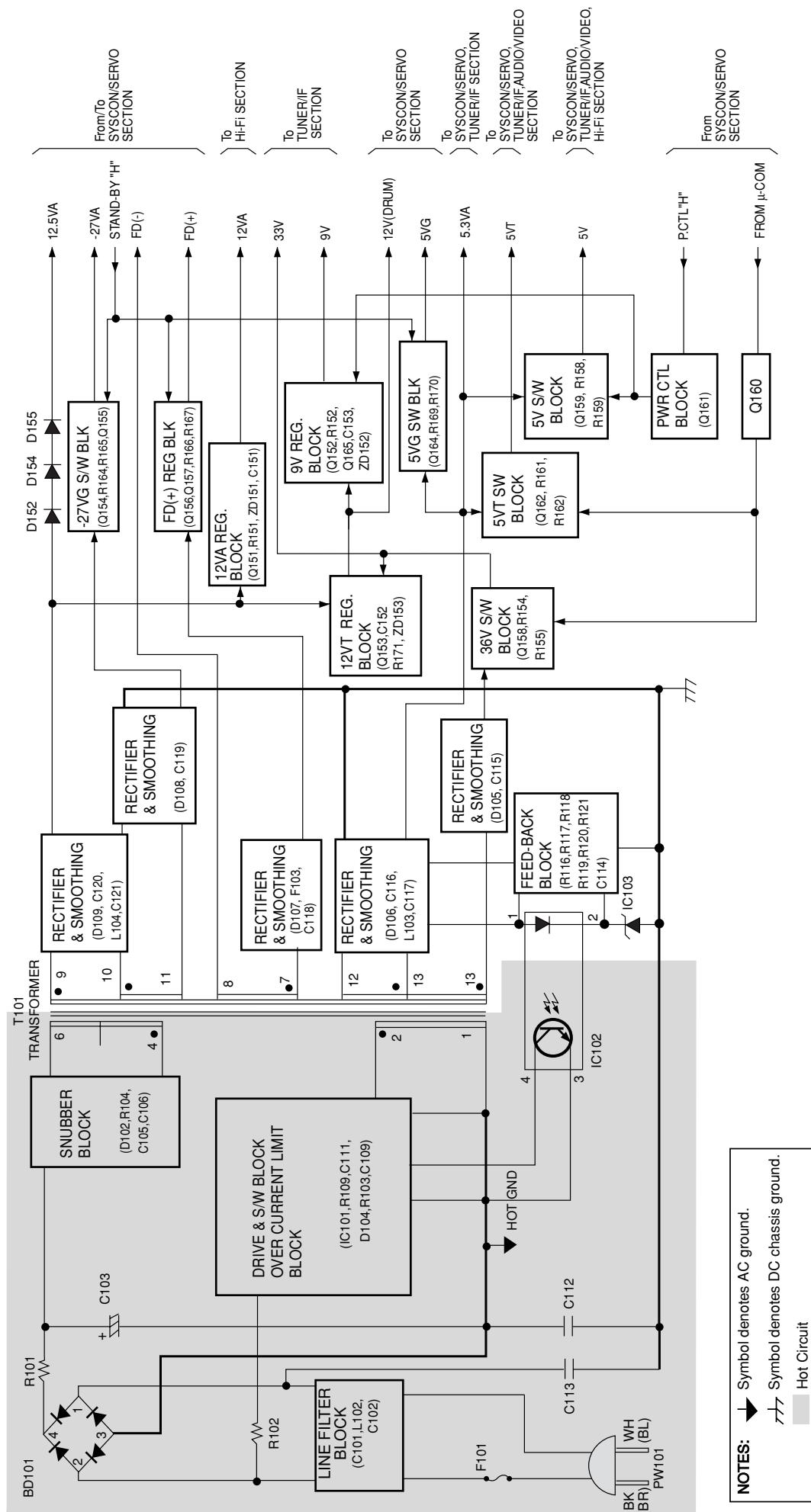
KTA1273

KTC2804

# WIRE HARNESS DIAGRAM

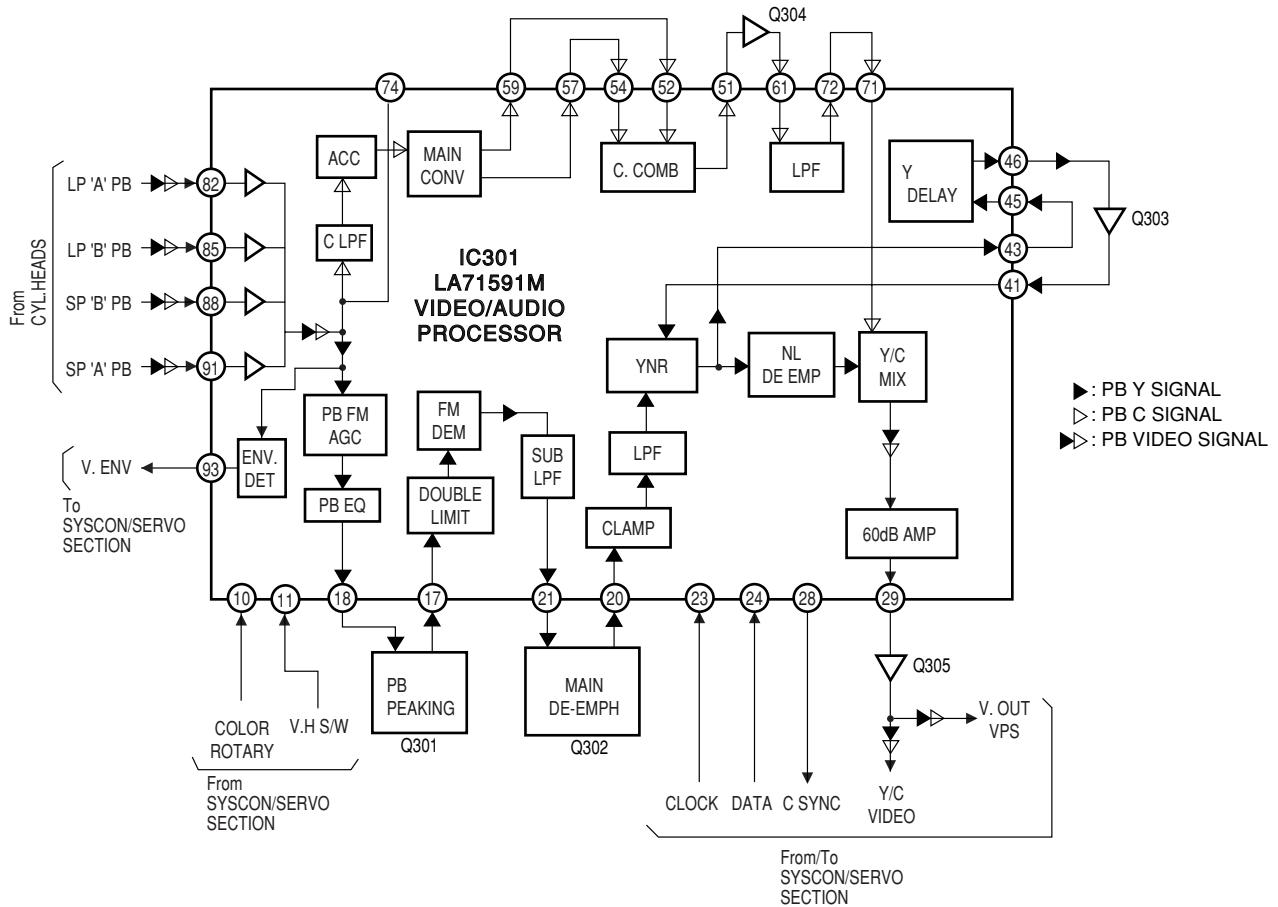


# BLOCK DIAGRAM-1 (POWER SECTION)

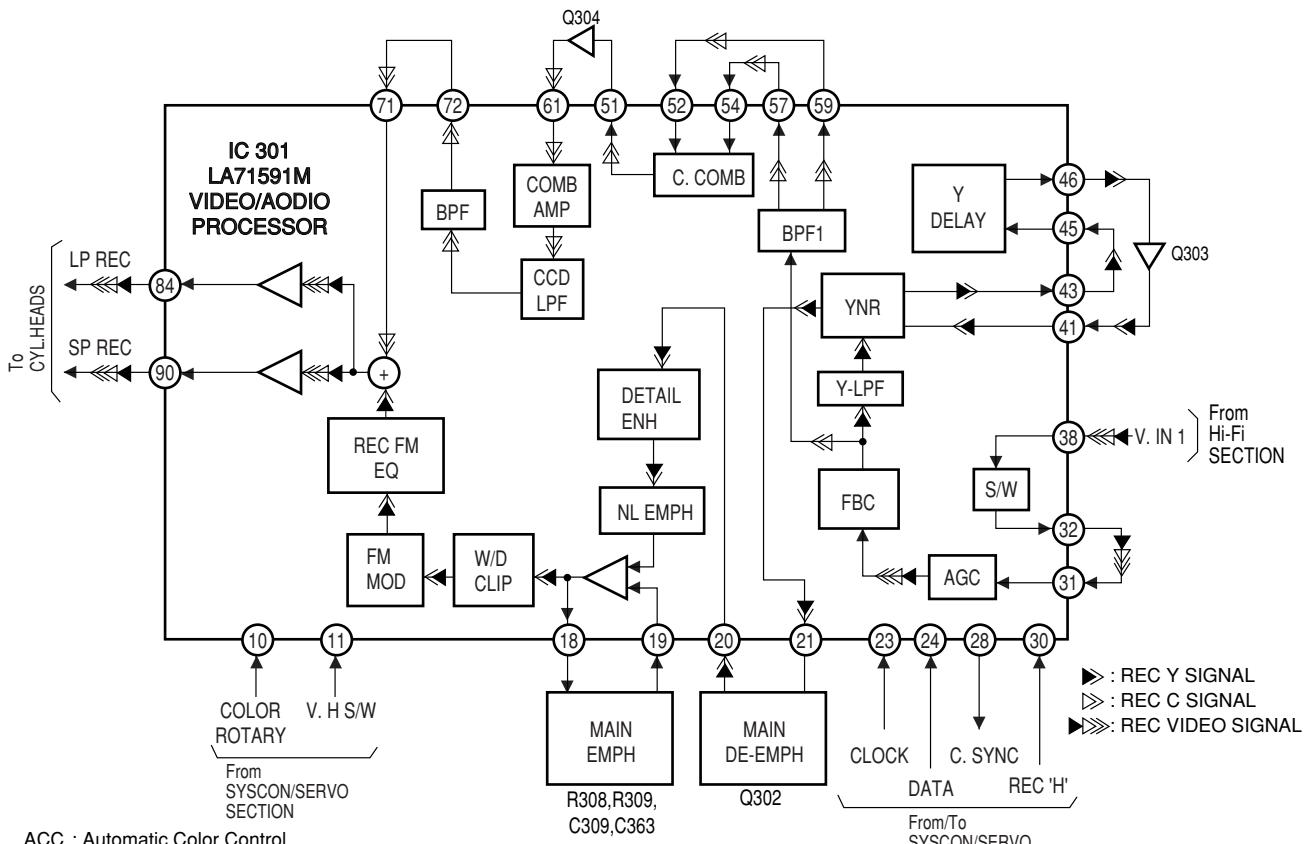


## BLOCK DIAGRAM-2 (VIDEO SECTION)

### PB MODE



### REC MODE



ACC : Automatic Color Control

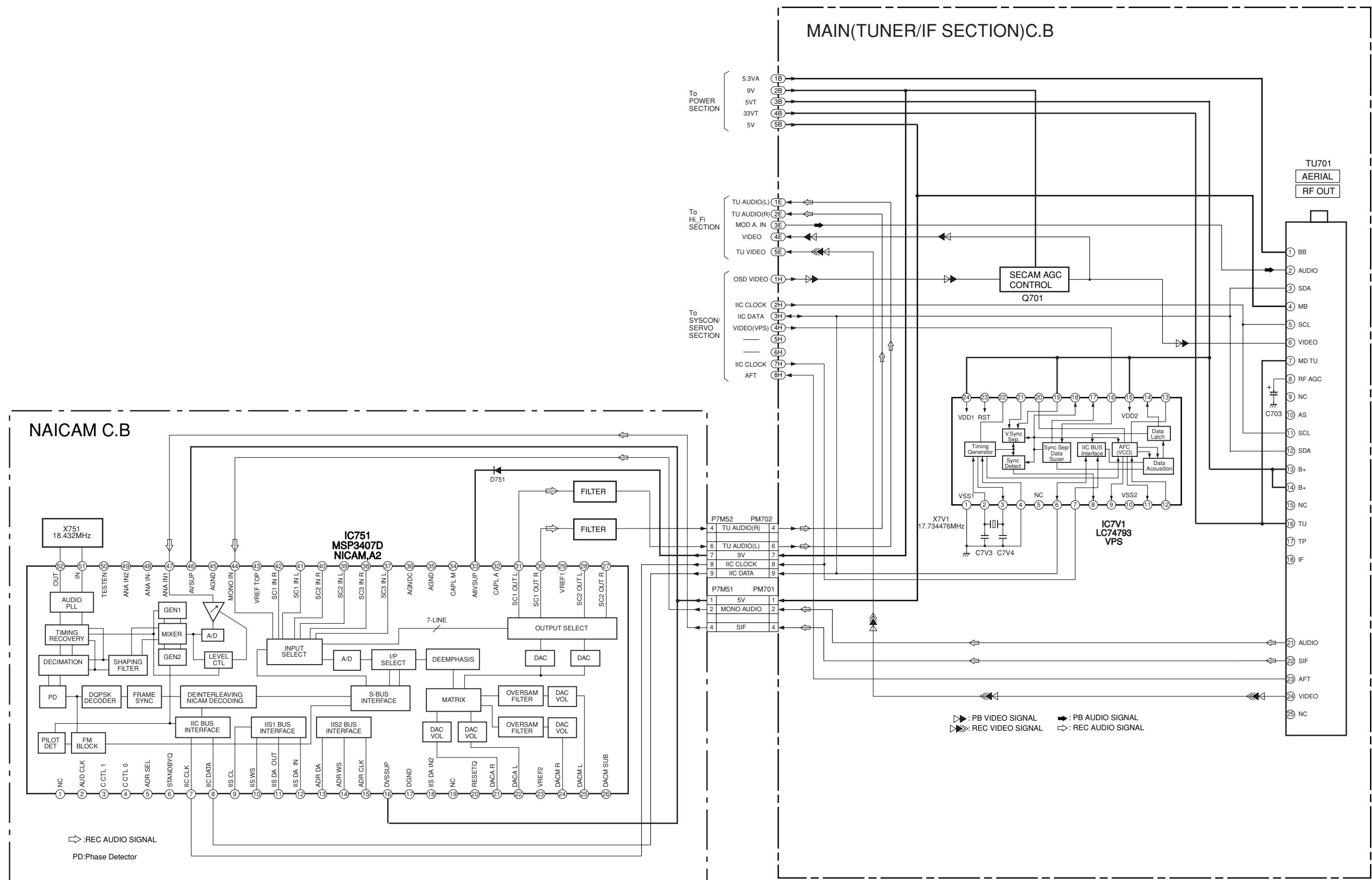
YNR : Y Noise Reduction

LPF : Low Pass Filter

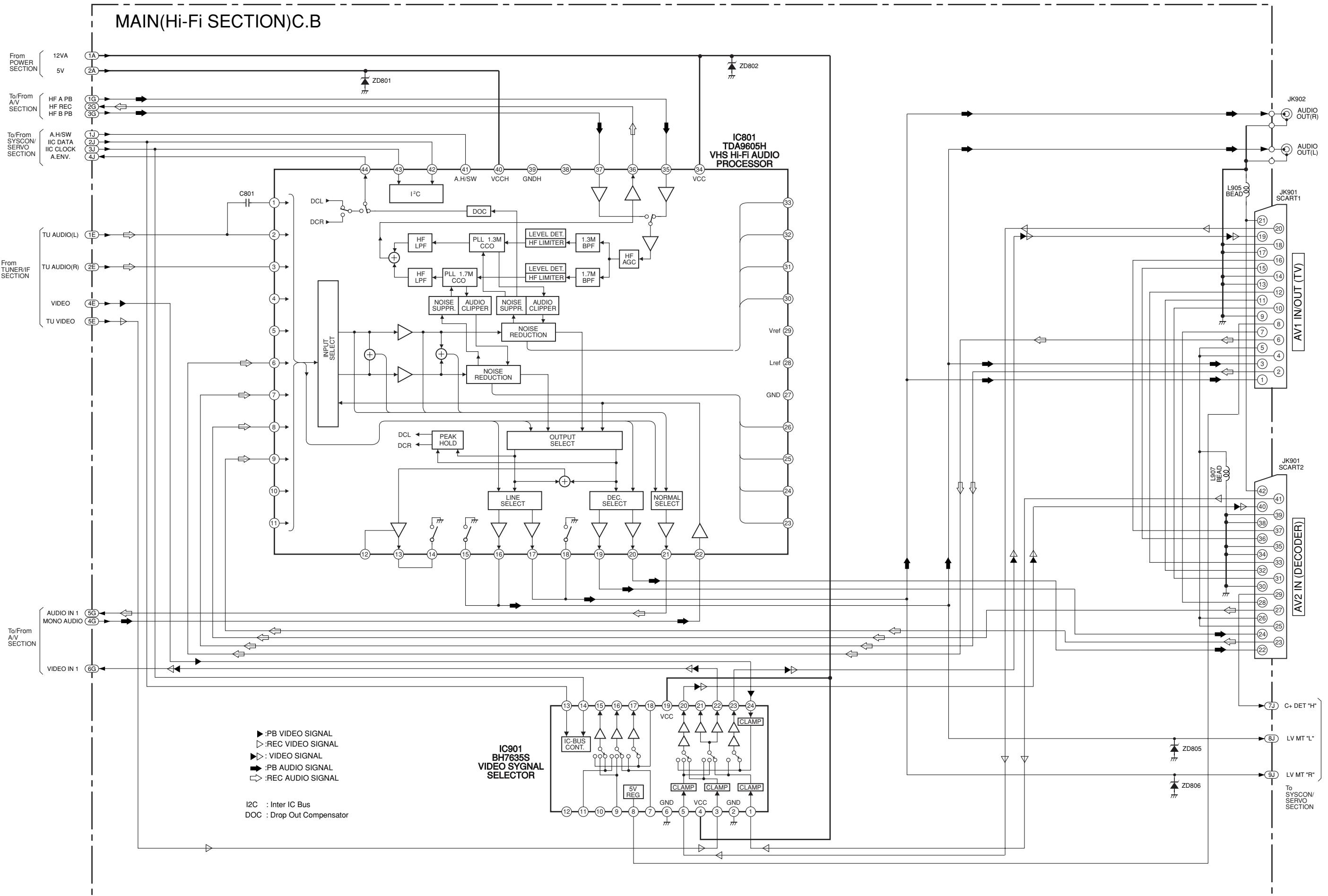
BPF : Band Pass Filter

FBC : Feed Back Clamp

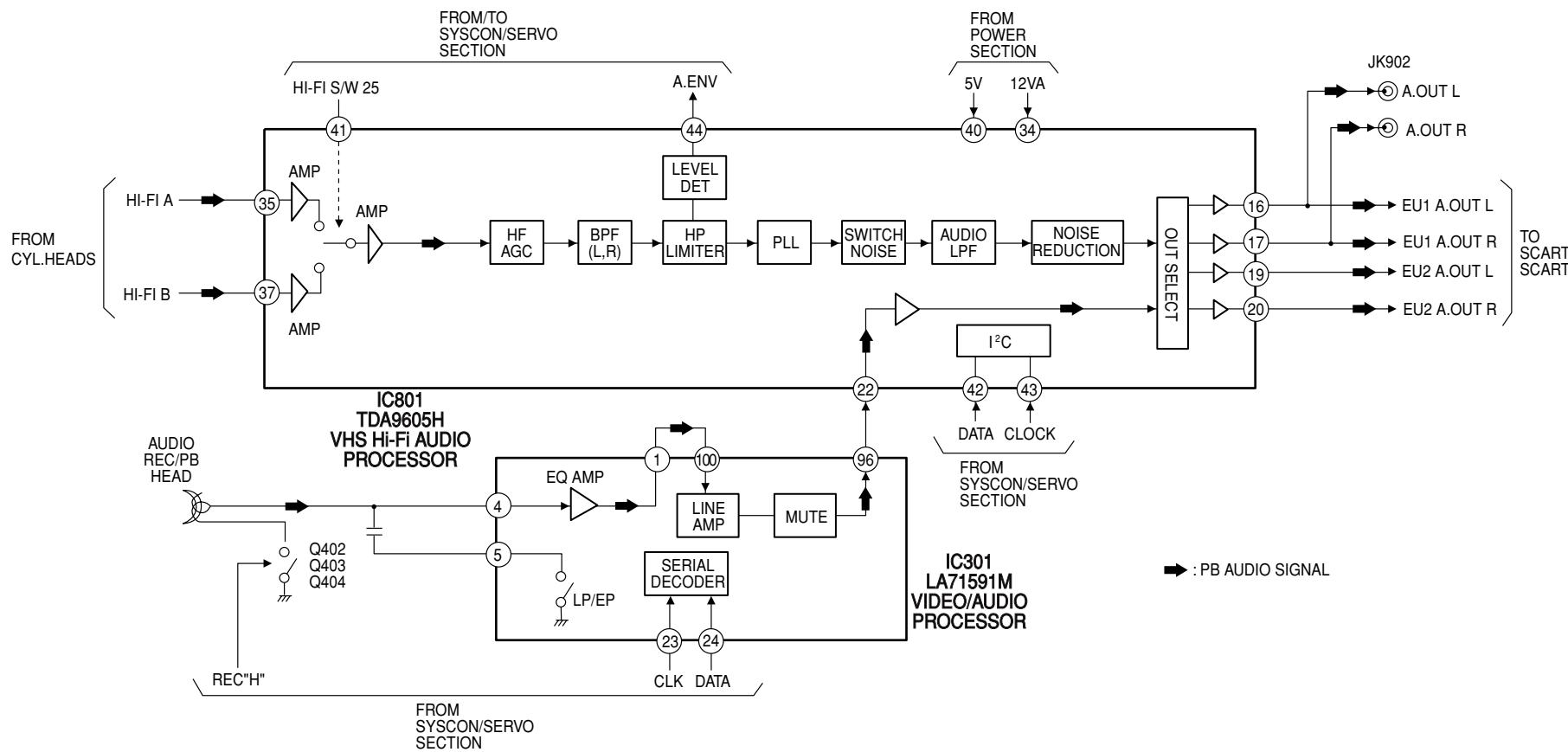
BLOCK DIAGRAM-3 (TUNER/IF, NICAM, A2 SECTION)



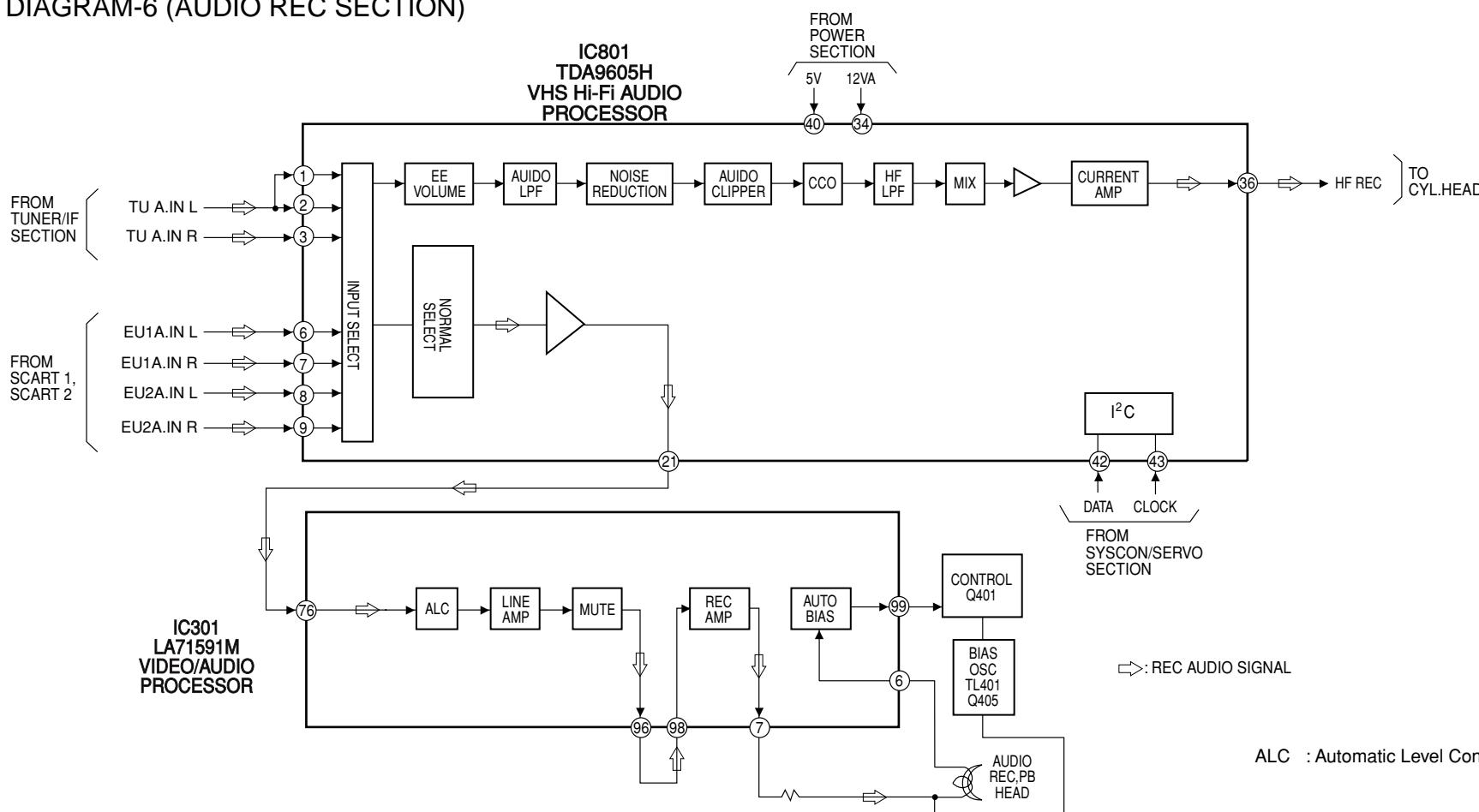
## BLOCK DIAGRAM-4 (Hi-Fi/SCART SECTION)



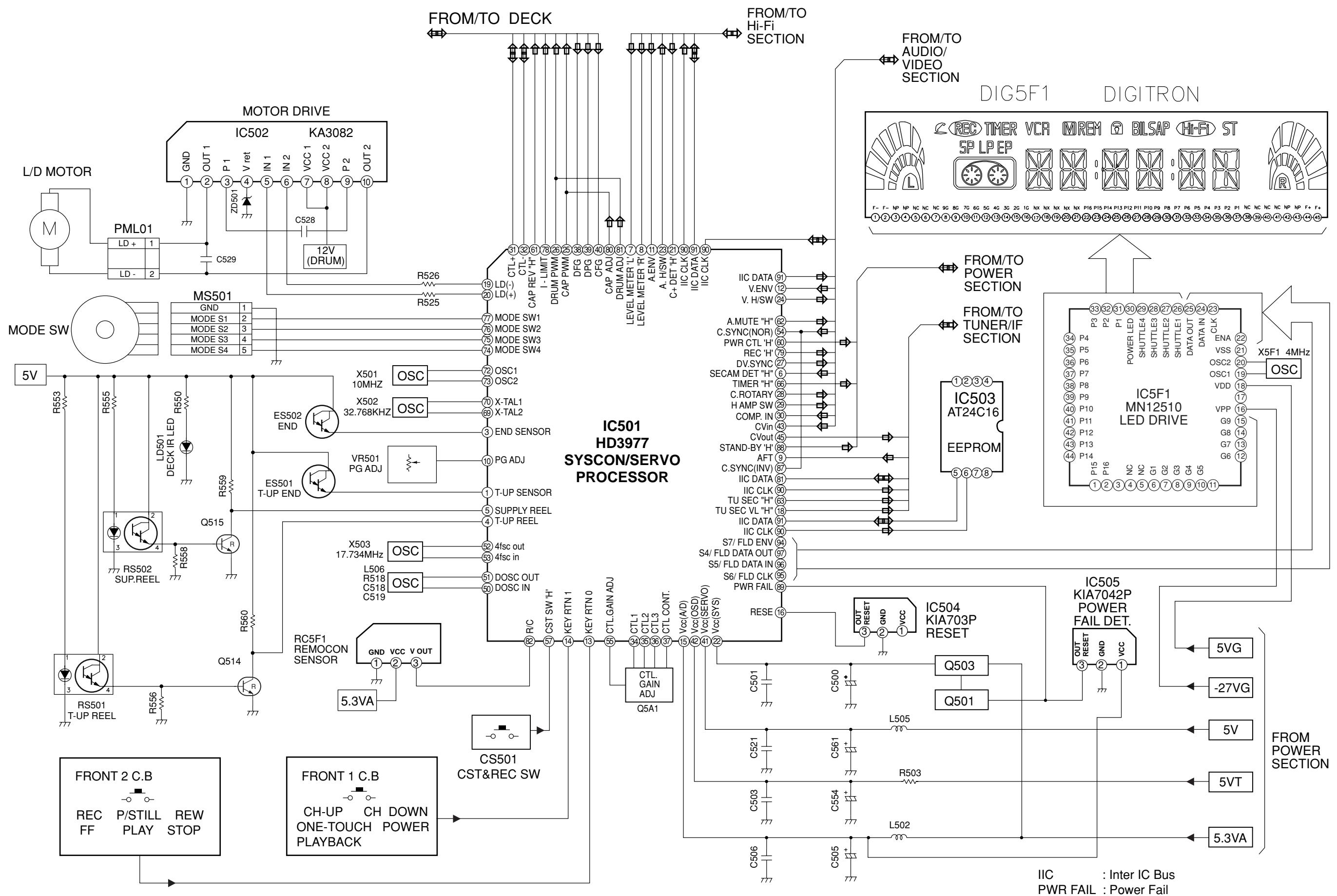
## BLOCK DIAGRAM-5 (AUDIO PB SECTION)



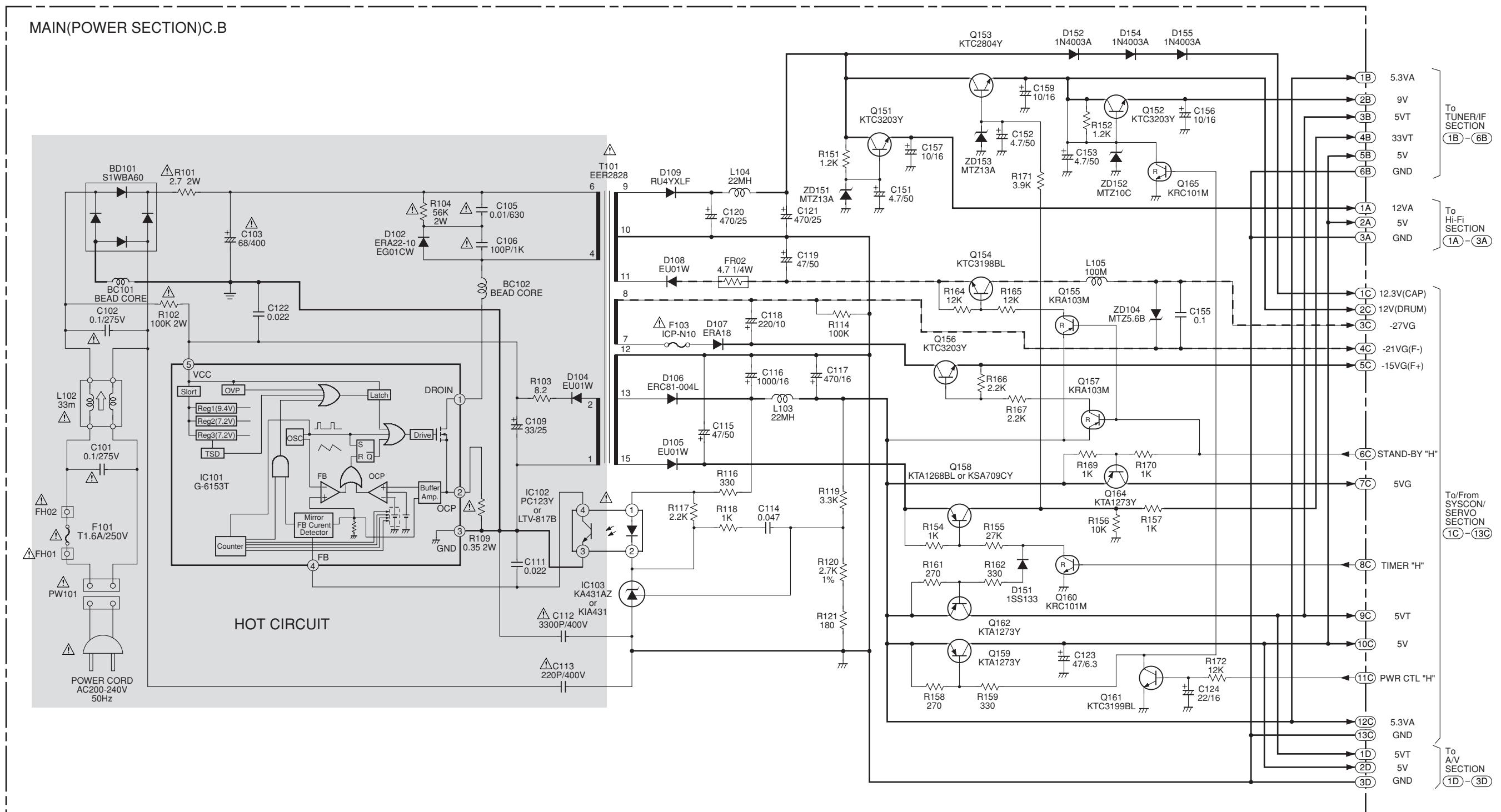
## BLOCK DIAGRAM-6 (AUDIO REC SECTION)



## BLOCK DIAGRAM-7 (SYSTEM CONTROL SECTION)

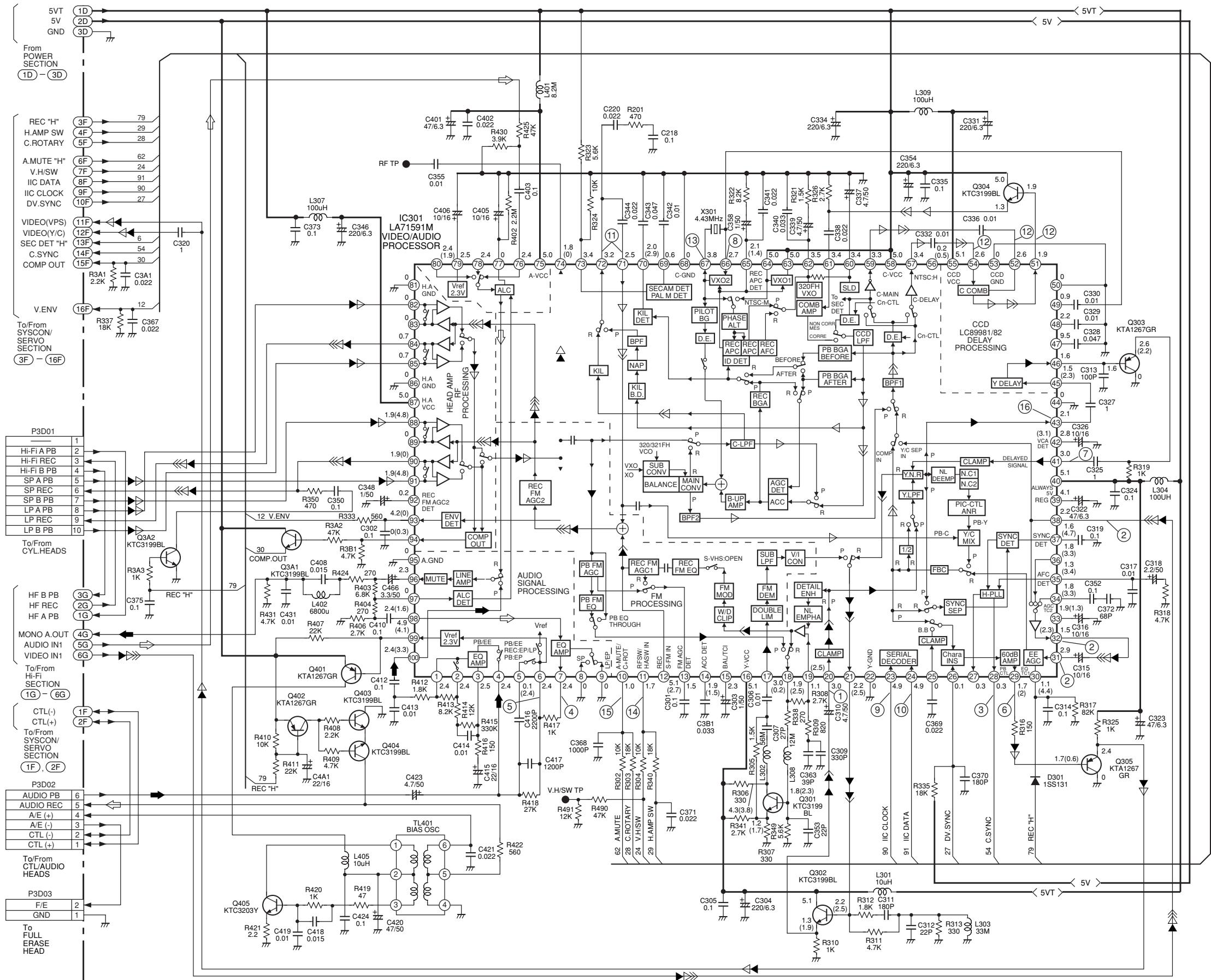


# SCHEMATIC DIAGRAM-1 (POWER SECTION)



## SCHEMATIC DIAGRAM-2 (AUDIO/VIDEO SECTION)

## MAIN(AUDIO/VIDEO SECTION)C.B



## ► :PB Y SIGNAL

### ► :PB CHROMA SIGNAL

► :PB VIDEO SIGNAL

► :REC Y SIGNAL  
▼ :REC CHROMA SIGNAL

► REC CHROMA SIGNAL

### ▶ VHS VIDEO SIGNAL

→ :PB AUDIO SIGNAL  
→ :PEQ AUDIO SIGNAL

REC AUDIO SIGNAL

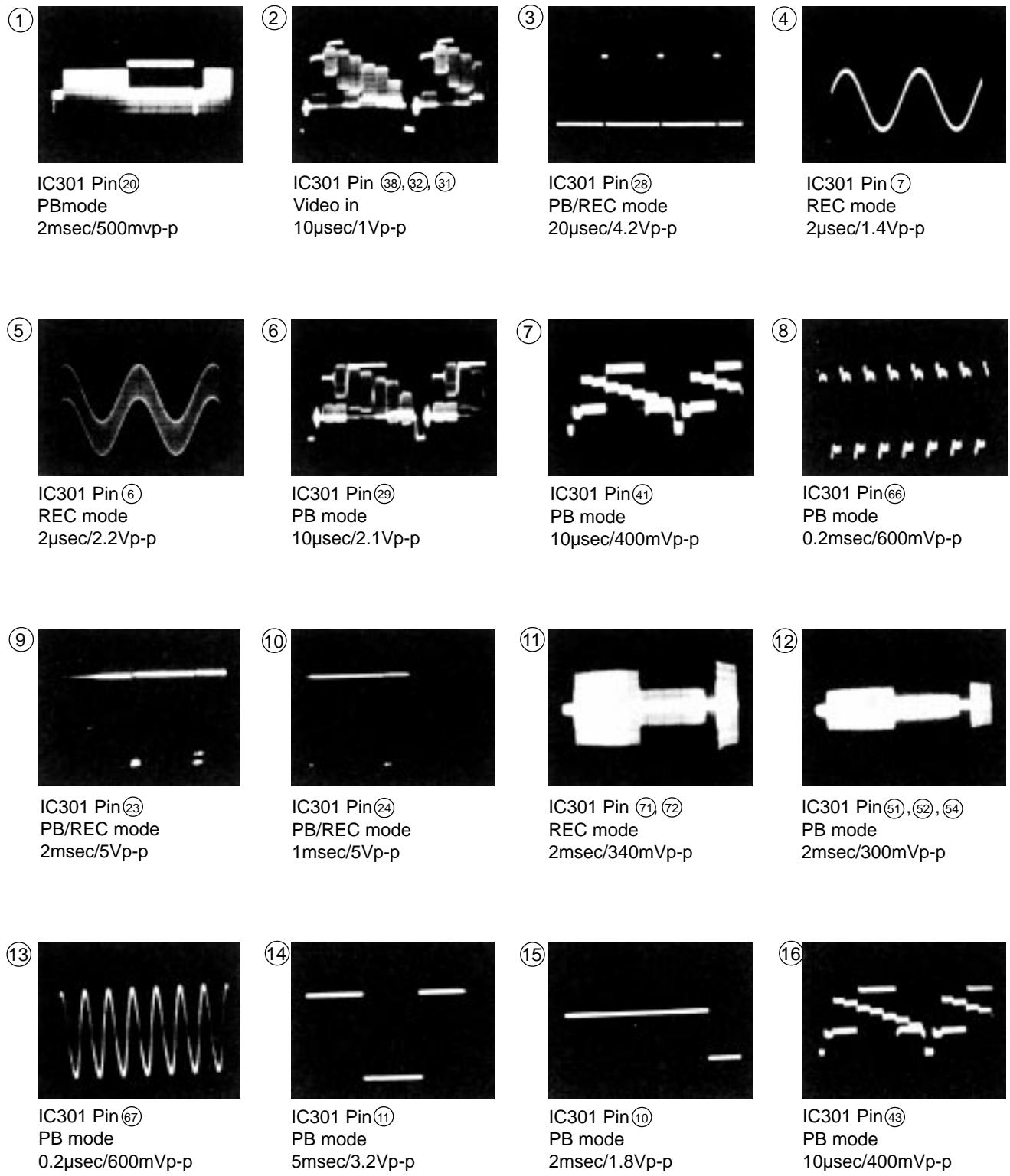
— SURFACE DRUG

- \* ONE VOLTAGE:PB OR  
TWO VOLTAGES:PB A

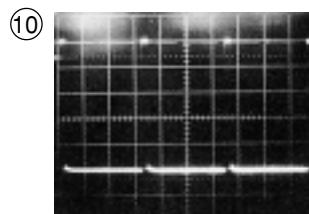
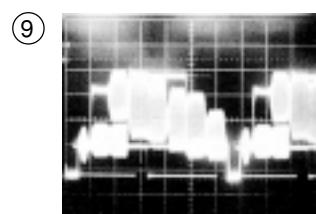
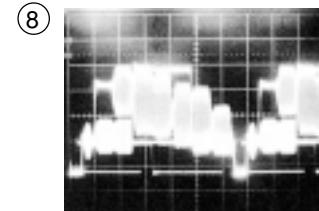
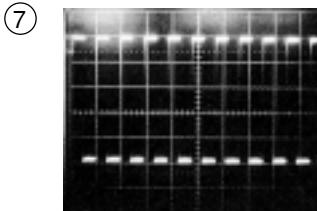
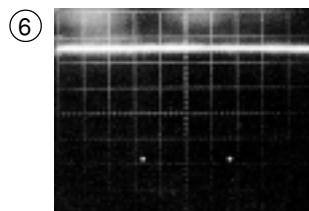
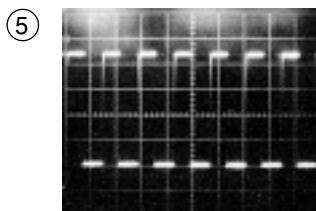
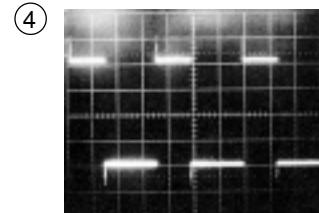
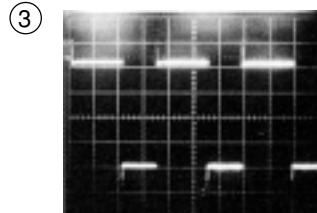
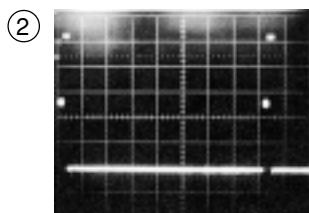
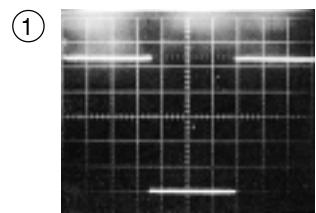
○— : WAVEFORMS No.

— — — — —

## WAVEFORM-1 (VIDEO SECTION)

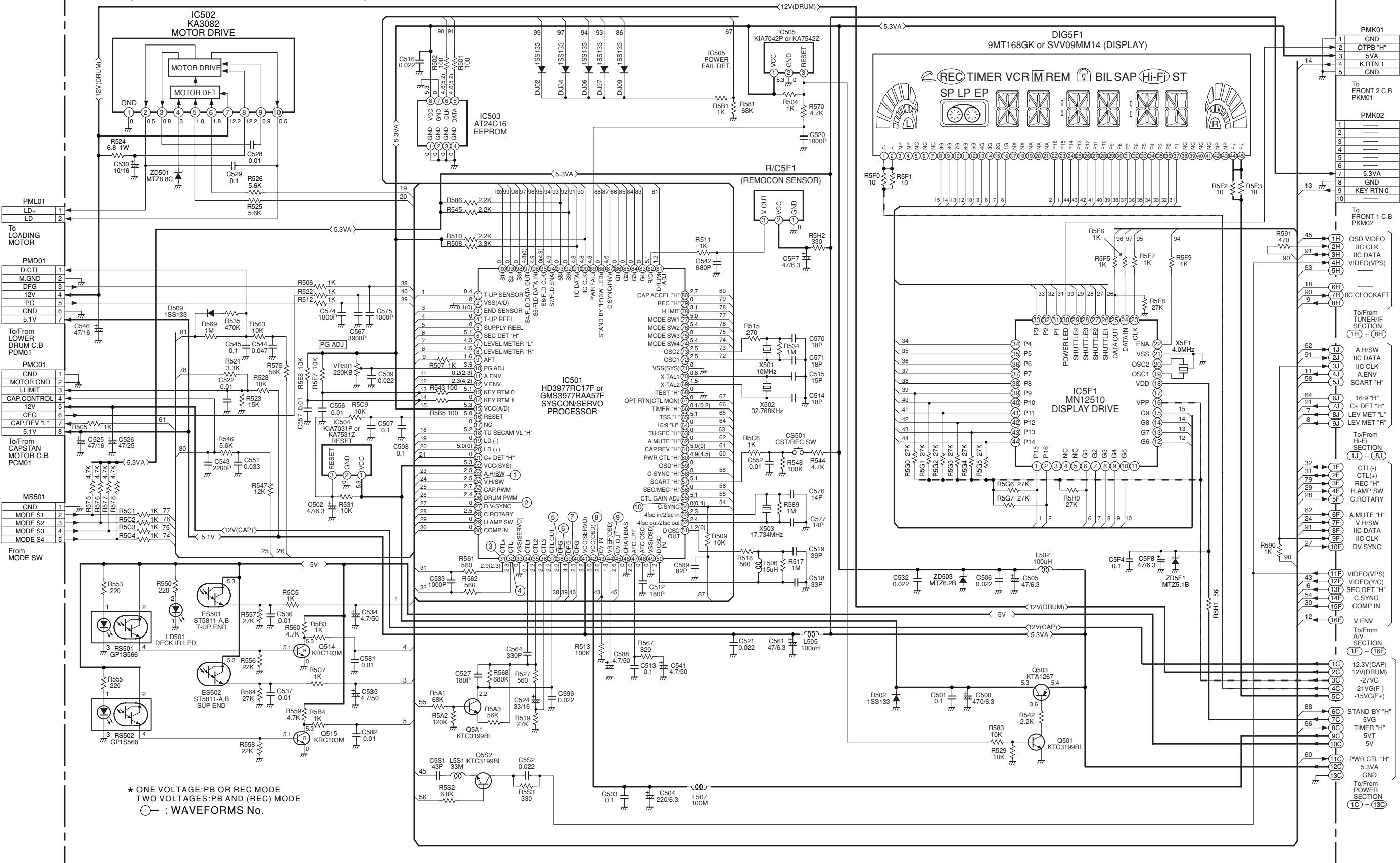


## WAVEFORM-2 (SERVO/OSD SECTION)

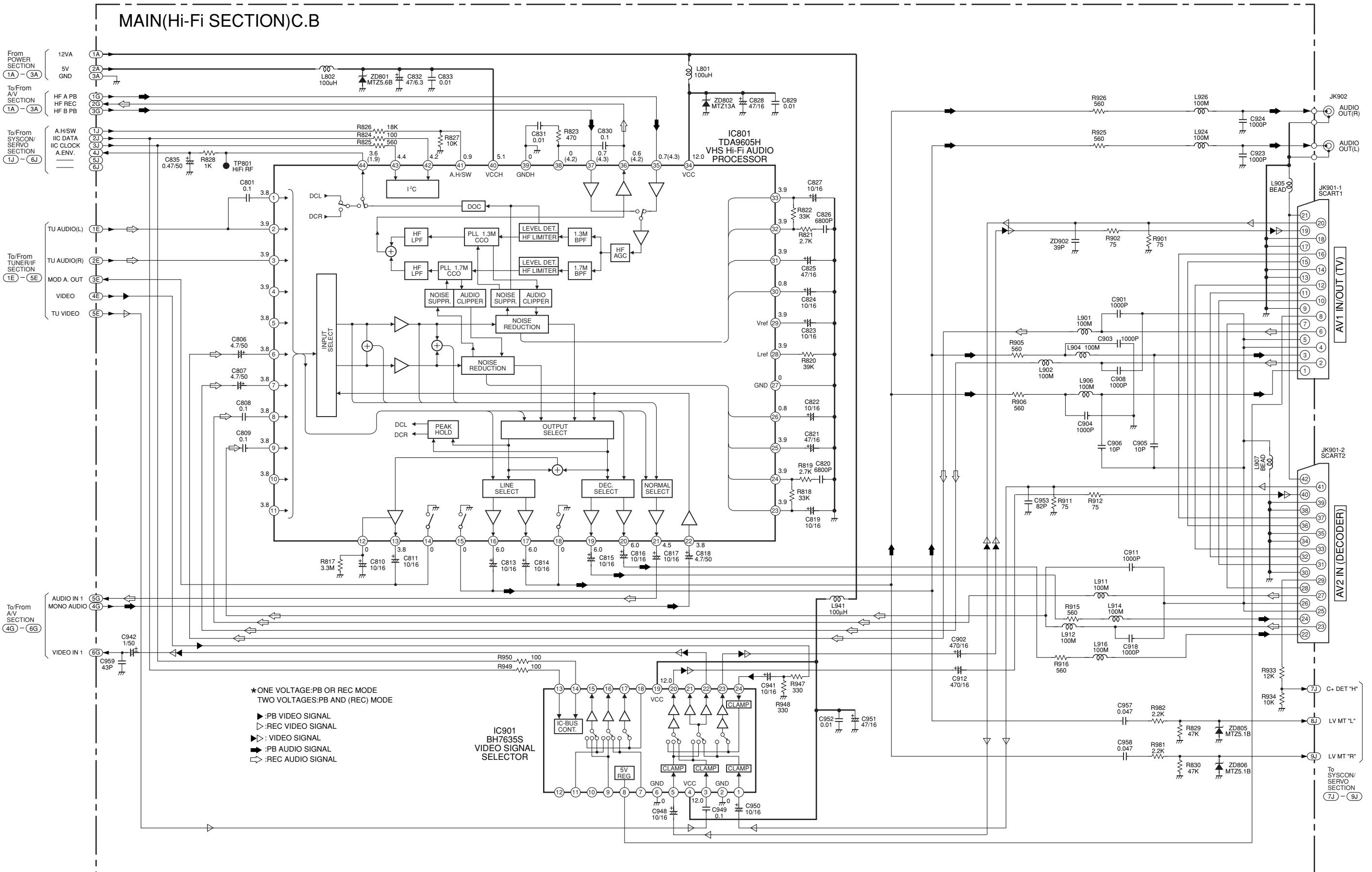


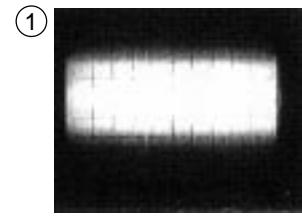
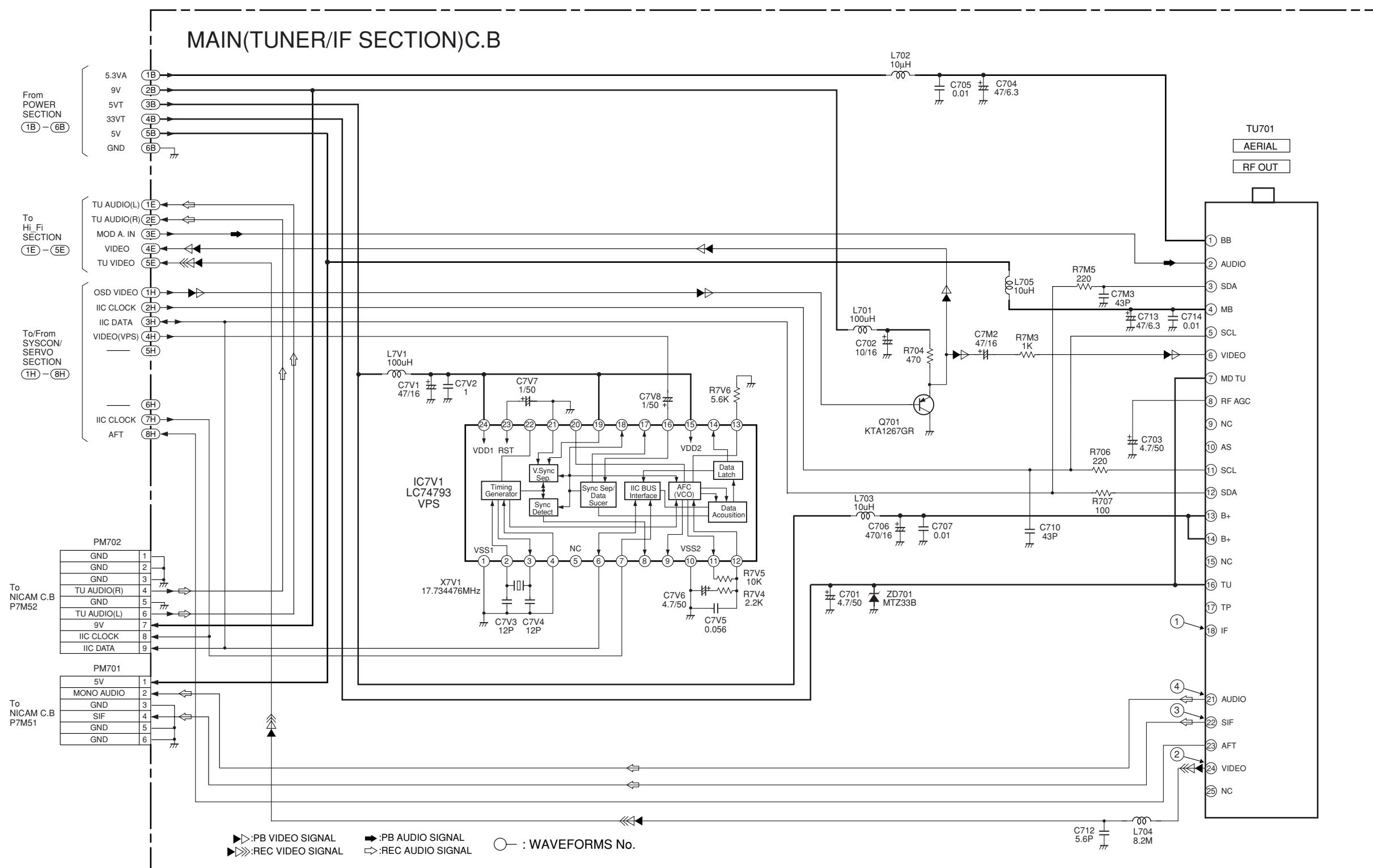
### SCHEMATIC DIAGRAM-3 (SYSCON/SERVO/OSD SECTION)

## MAIN(SYSCON/SERVO SECTION)C.B

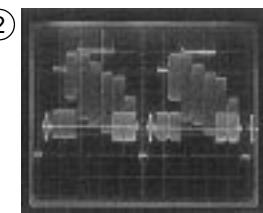


## SCHEMATIC DIAGRAM-4 (Hi-Fi SECTION)

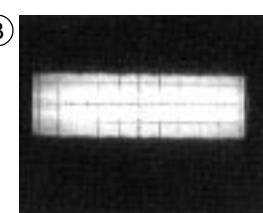




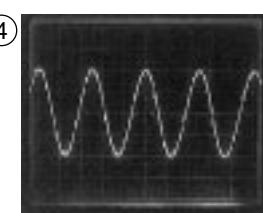
TU701 Pin 18  
(IF Signal)  
0.5msec/200mVp-p



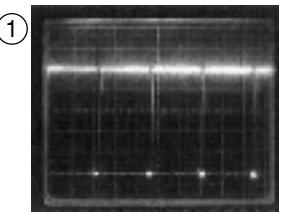
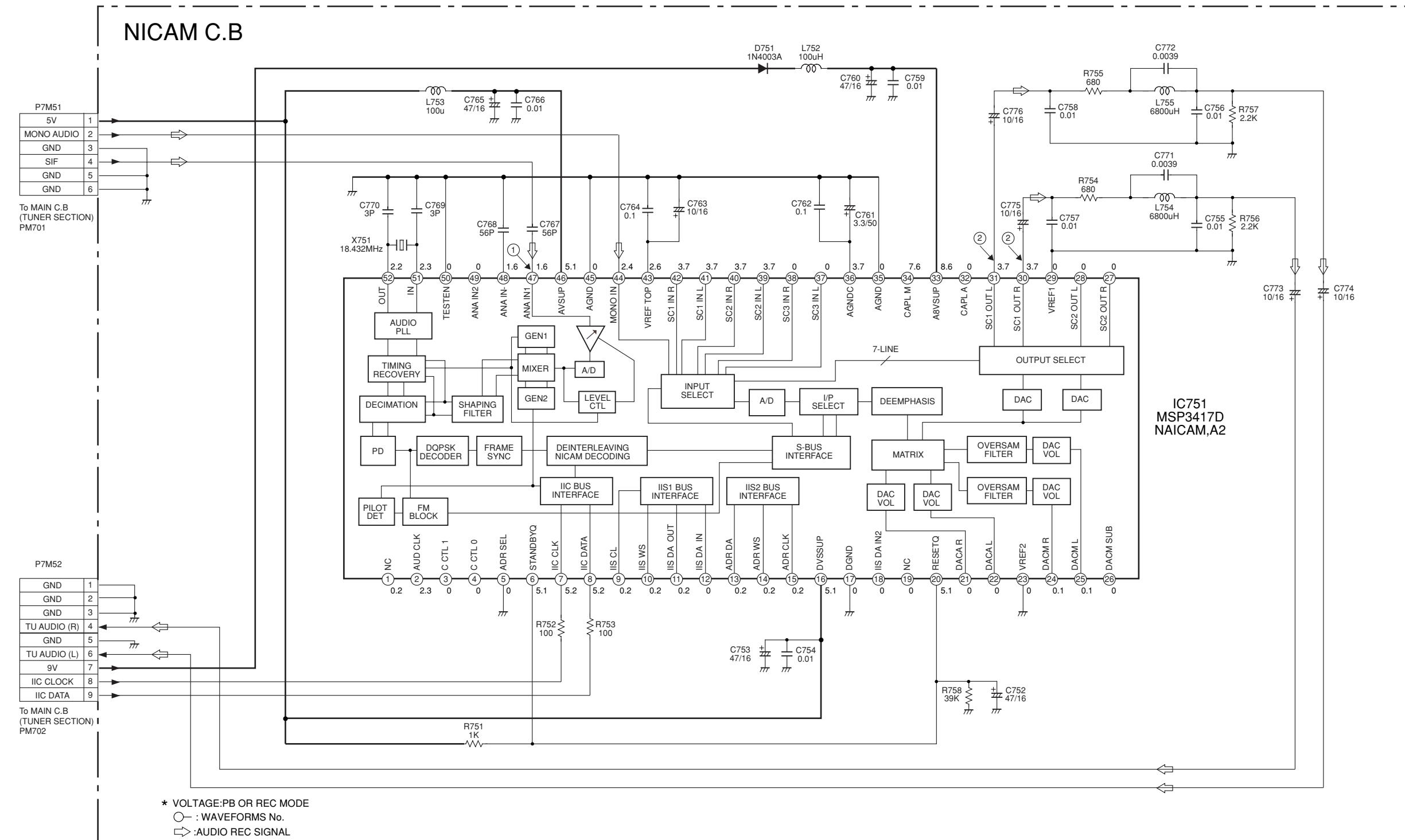
TU701 Pin 24  
(Video Signal)  
10μsec/1.0Vp-p



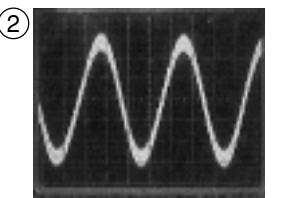
TU701 Pin 22  
(SIF Signal)  
50μsec/200mVp-p



TU701 Pin 21  
(Audio Signal)  
0.5msec/1.35Vp-p

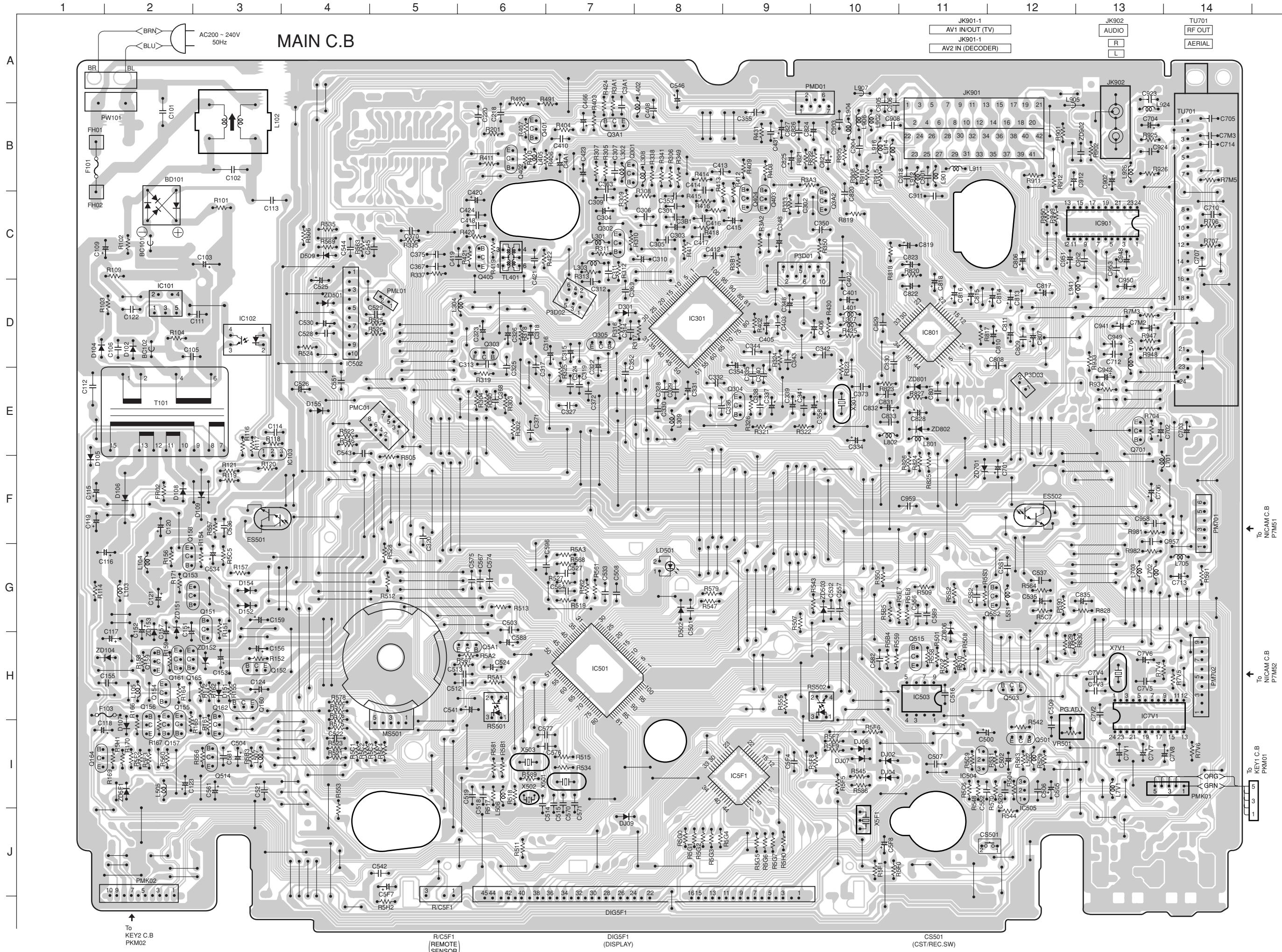


IC751 Pin 47  
(IF Signal)  
50μsec/140mVp-p

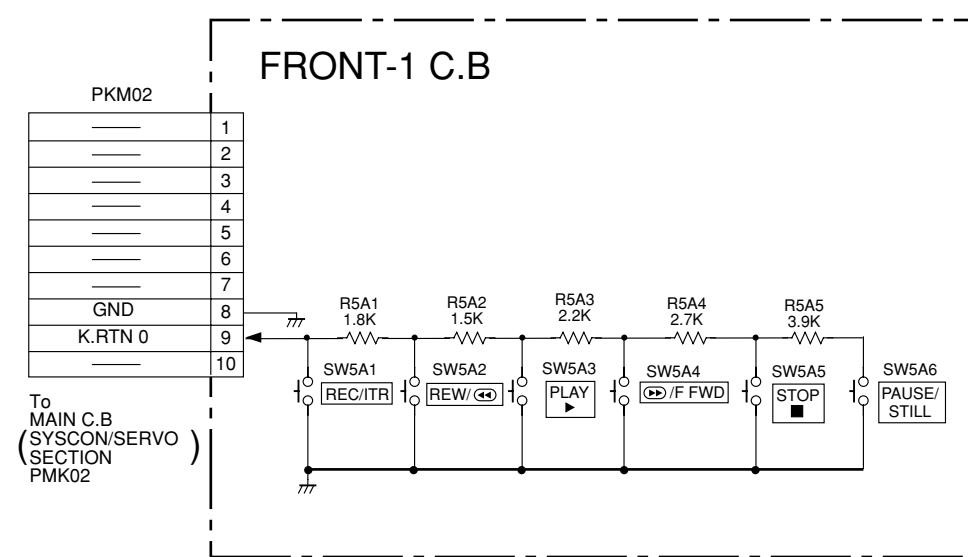


IC751Pin ⑩,⑪  
0.5μsec/1.24Vp-p

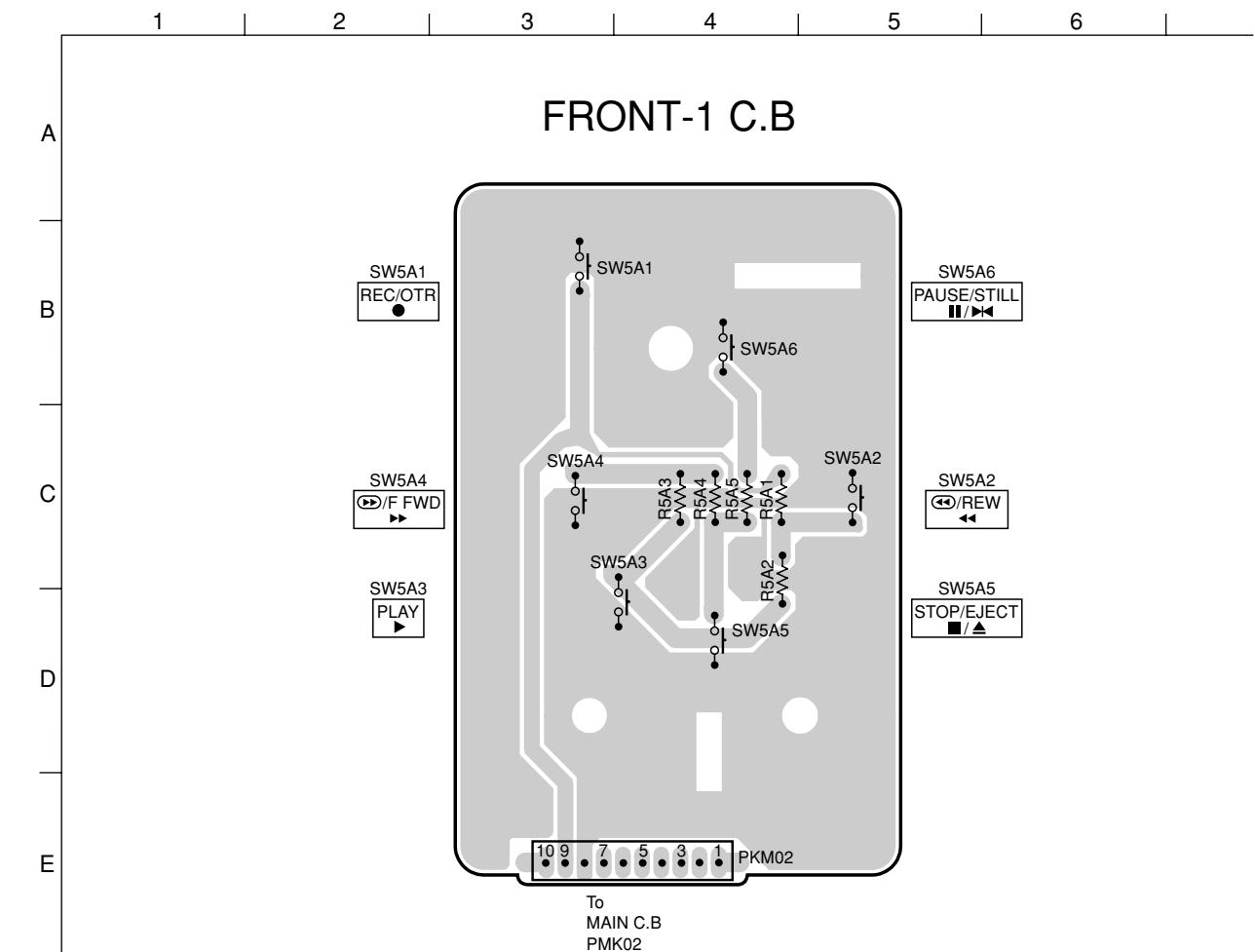
## WIRING-1 (MAIN C.B SECTION)



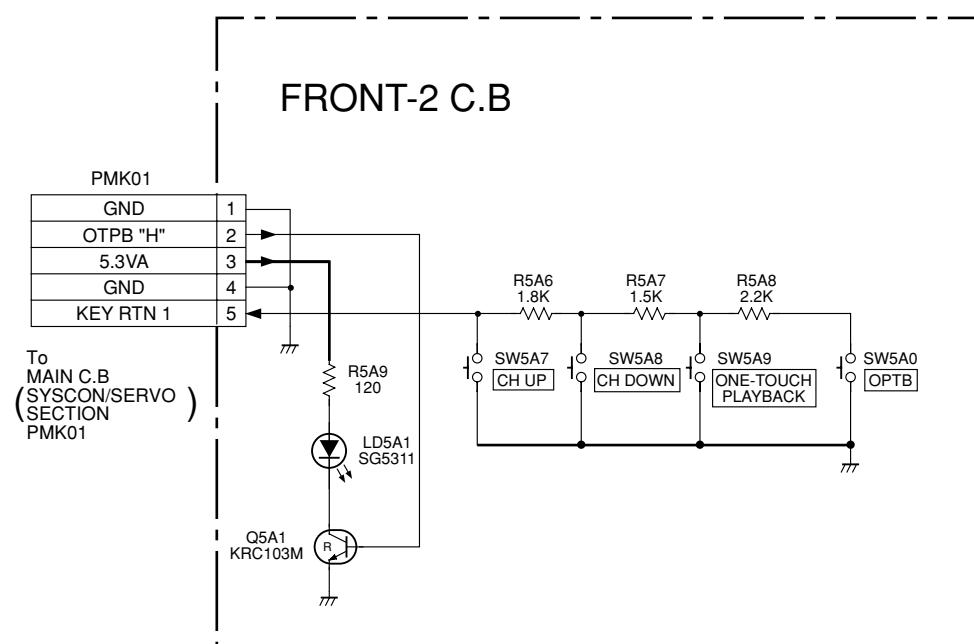
SCHEMATIC DIAGRAM-7 (FRONT-1 C.B SECTION)



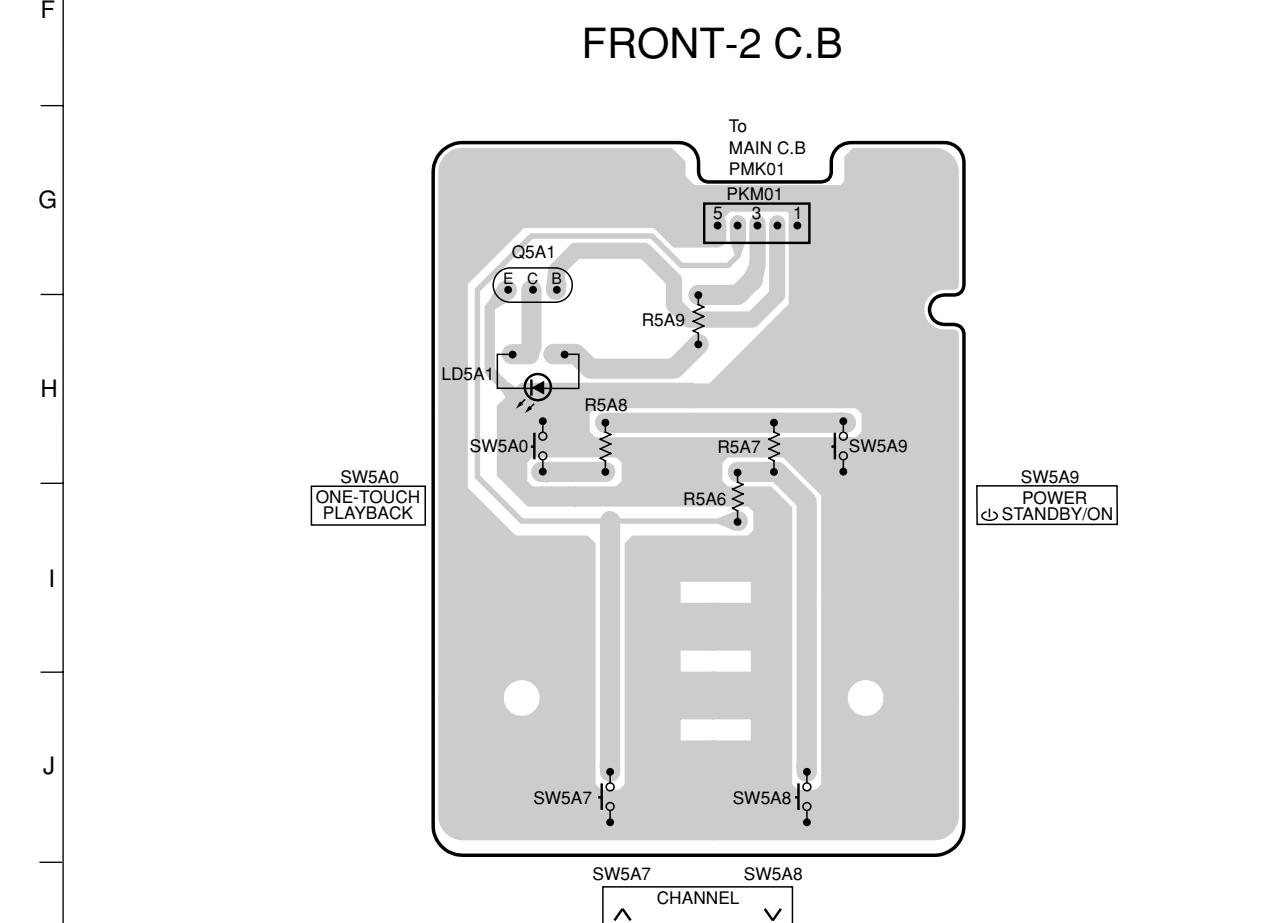
WIRING-2 (FRONT-1 C.B)



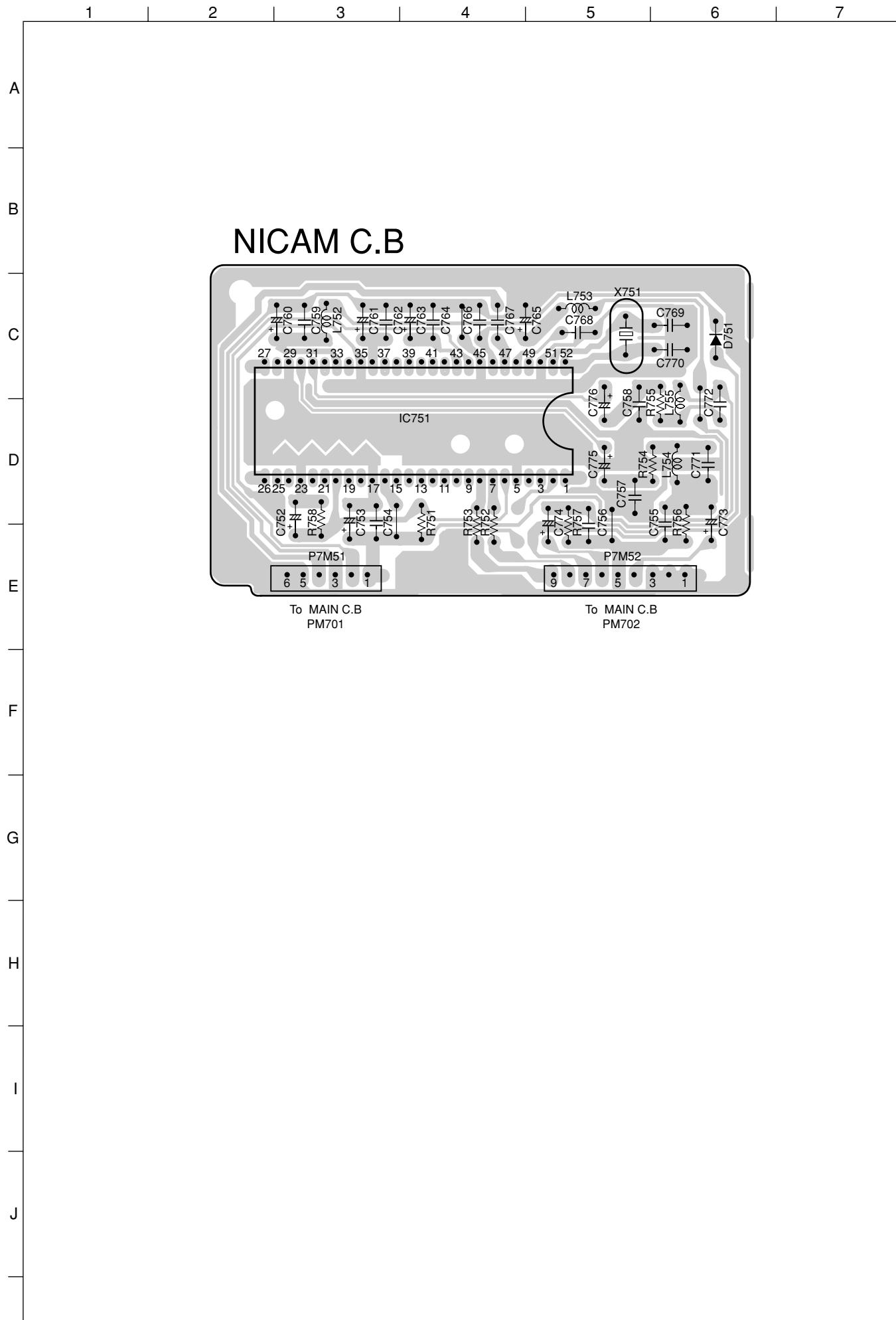
SCHEMATIC DIAGRAM-8 (FRONT-2 C.B SECTION)



WIRING-3 (FRONT-2 C.B)

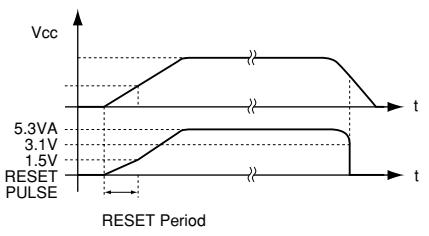


# WIRING-4 (NICAM C.B)



**IC DESCRIPTION**  
**IC, HD3977RC17F**

Pin No.	Pin Name	I/O	Description								
1	TAKE UP SENSOR	I	End sensor to detect the tape's terminal (Lead taps section). If "H" is detected signal in the REW, REV modes, the mechanism stops and ejects the cassette automatically.								
2	VSS (A/D)	-	GND								
3	END SENSOR	I	End sensor to detect tape's terminal (Lead tape section). If "H" signal is detected in the FF mode, then REW mode will occur automatically.								
4	TAKE UP REEL	I	<p>1. When the tape is transporting. Reel pulses are input.</p> <p>2. If the tape is transporting and take-up reel pulses are not input during regular time, the unit stops at STOP point automatically.</p> <table border="1"> <thead> <tr> <th>Each operating mode</th><th>Sec</th></tr> </thead> <tbody> <tr> <td>PLAY, REC</td><td>SP=3 EP/LP=6</td></tr> <tr> <td>FF, (REW)</td><td>2</td></tr> <tr> <td>CUE, (REV)</td><td>1</td></tr> </tbody> </table> <p>3. Distinguishes the tape type, counts the tape remaining and reduces the tape speed at the end of FF/REW modes.</p>	Each operating mode	Sec	PLAY, REC	SP=3 EP/LP=6	FF, (REW)	2	CUE, (REV)	1
Each operating mode	Sec										
PLAY, REC	SP=3 EP/LP=6										
FF, (REW)	2										
CUE, (REV)	1										
5	SUPPLY REEL	I	<p>1. When the tape is transporting, Reel pulses are input.</p> <p>2. Distinguishes the tape type, counts the tape remaining and reduces the tape speed at the end of FF/REW modes.</p> <p>3. If supply reel pulses are not detected, FF/REW mode is not operating normally. And the unit stops at stop point automatically. (Refer to table of pin 17.)</p>								
6	SED DET "H"	I	System detect for B/G or SECAM in VV/EE mode. (from SECAM I.C)								
7	NC "L"	-	Not connect								
8	NC "R"	-	Not connect								
9	AFT	I	<p>Port to detect AFT (+)'s state during tuning. When more than 4V, is detected by AFT (+) detector.</p> <p>Detects AFT (-)'s state during tuning. When less than 0.96V, is detected by AFT (-) detector.</p>								
10	PG ADJ	I	A DC bias level set by VR501 determines the pulse width of PG M.M for H. S/W 30 switching interval.								
11	NC	-	Not connect.								
12	V.ENV	I	<p>1. Reference input signal to perform auto tracking mode. Video envelope (F/F) signal is input through LPF.</p> <p>2. Perform auto tracking mode by sampling video envelope signal which is input during a period of head switching and changing servo tracking data to obtain maximum value.</p> <p>Note : When the DC level of the envelope is at its maximum, it is considered tracking properly.</p>								
13	KEY RTN 0	I	KEY RTN 0								

Pin No.	Pin Name	I/O	Description																		
			<table border="1"> <thead> <tr> <th>No.</th><th>KEY NAME</th><th>A/D RANGE</th></tr> </thead> <tbody> <tr> <td>1</td><td>SP/EP</td><td>0.0V ~ 0.45V</td></tr> <tr> <td>2</td><td>CH UP</td><td>0.46V ~ 0.96V</td></tr> <tr> <td>3</td><td>CH DOWN</td><td>0.97V ~ 1.47V</td></tr> <tr> <td>4</td><td>STOP/EJECT</td><td>1.48V ~ 1.97V</td></tr> <tr> <td>5</td><td>REC/ITR</td><td>1.99V ~ 2.48V</td></tr> </tbody> </table>	No.	KEY NAME	A/D RANGE	1	SP/EP	0.0V ~ 0.45V	2	CH UP	0.46V ~ 0.96V	3	CH DOWN	0.97V ~ 1.47V	4	STOP/EJECT	1.48V ~ 1.97V	5	REC/ITR	1.99V ~ 2.48V
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5	POWER	1.99V ~ 2.48V																			
15	VCC(A/D)	-	A/D Vcc.																		
16	RESET	I	<p>1. Initially 5.3 VA is applied to Vcc pin 22 of μ-COM.  This pulse is applied to clear the RAM inside the μ-COM and to reset programs to 0000H in ROM.  2. Reset timing pulse.</p> 																		
17	NC	-	Not connect																		
18	TUNER SECAM VL "H"	O	Now TUNING BAND is SECAM VHF-L. (to TUNER)																		
19	LD (-)	O	<p>1. Output signal to IC502 for control of the loading motor's direction of rotation.  2. Control table of loading motor's driving direction.</p> <table border="1"> <thead> <tr> <th>Pin 19</th><th>Pin 20</th><th>Rotation of Loading Motor</th></tr> </thead> <tbody> <tr> <td>H</td><td>H</td><td>Brake Mode.</td></tr> <tr> <td>H</td><td>L</td><td>Reverse Direction.</td></tr> <tr> <td>L</td><td>H</td><td>Forward Direction.</td></tr> </tbody> </table>	Pin 19	Pin 20	Rotation of Loading Motor	H	H	Brake Mode.	H	L	Reverse Direction.	L	H	Forward Direction.						
Pin 19	Pin 20	Rotation of Loading Motor																			
H	H	Brake Mode.																			
H	L	Reverse Direction.																			
L	H	Forward Direction.																			
20	LD (+)																				
21	C+DET "H"	I	Now input signal is CANAL/PREMIER. (from SCART 2)																		

Pin No.	Pin Name	I/O	Description
22	Vcc (SYS)	-	SYSCON Vcc.
23	A.H.S/W 30	O	Not connect
24	V.H.S/W	O	<p>Pulses output for switching video head A and B.</p> <ul style="list-style-type: none"> <li>- Produces PG M.M pulses internally by using inputted DPG, DFG pulses to pin 38, 39.</li> <li>- Produces video head switching 30 Hz pulses by synchronizing at edge point of first PG. M.M.(PG monostable multivibrator)</li> <li>- Produces audio head switching 30 Hz pulses by synchronizing at edge point of second PG.M.M.</li> </ul>
25	CAPSTAN PWM	O	<ul style="list-style-type: none"> <li>- Output pulses (PWM waveform) for controlling capstan motor speed and phase; control feedback voltage which is inputted to the capstan motor driver IC.</li> <li>- Output pulses (PWM waveform) for controlling capstan motor stop and drive during slow mode.</li> </ul>
26	DRUM PWM	O	Output pulses (PWM waveform) for controlling drum motor speed and phase; control feedback voltage which is inputted to the drum motor driver IC.
27	D.V. SYNC.	O	Provides an output sync signal to prevent the picture from rolling upward or downward, when the video track is not being scanned in the search mode.
28	COLOR ROTARY	O	A pulse to control phase of color at Y/C circuit.
29	HEAD AMP S/W	O	A pulse for switching the HEAD SP and EP on the DRUM.
30	COMP IN	I	A reference signal for switching video head (SPA, SPB, EPA, EPB) on the drum in search the mode.
31	CTL (+)	I/O	CTL pulse is outputted at recording, CTL pulse is inputted at playback. Functions which control Capstan motor phase at playback, check tape speed, Viss and Real time counter are performed by using CTL pulse (input/output).
32	CTL (-)		
33	Vss (SERVO)	-	Servo circuit GND in the $\mu$ -COM.
34	CTL 1	I/O	Port for gain (Amp) control of CTL pulse during recording and playback.
35	CTL 2		
36	CTL 3		
37	CTL OUT		
38	D.FG	I	<p>D.FG pulse input according to rotation of drum motor.</p> <p>Produces Audio/Video Head S/W 30Hz by using these pulses. And it is used as a comparison signal for speed control of the drum motor.</p>
39	D.PG	I	<p>One D.PG pulse is generated for each rotation the drum motor and inputted to <math>\mu</math>-COM.</p> <p>When producing Head S/W pulses, D.PG pulse is used as reference point, and it is used as comparison signal when controlling drum motor phase.</p>
40	C.FG	I	<p>C.FG pulses are generated by the rotating capstan motor and are inputted to <math>\mu</math>-COM.</p> <p>When checking tape speed and controlling. The capstan motor phase, These CFG pulses are used as comparison signal.</p>
41	Vcc (SERVO)	I	Vcc for servo circuit in the $\mu$ -COM.
42	Vcc (OSD)	I	Vcc for OSD circuit in the $\mu$ -COM.
43	CV IN	I	When the OSD display function is activated both video and text are present, when in the EE or PB modes.

Pin No.	Pin Name	I/O	Description
44	Vref (OSD)	—	GND.
45	CV OUT	O	The video signal is output to the RF modulator and line output jack.
46	CHAR BIAS	—	GND.
47	AFC LPF	I	Horizontal sync is used to lock the OSD.
48	AFC OSC		(Reduce Jitter)
49	Vss (OSD)	—	GND.
50	DOSC IN	I	OSD DOT CLOCK oscillator. (OSD character oscillator)
51	DOSC OUT	O	Determining the horizontal position (left or right) of OSD.
52	4fsc OUT	O	Oscillator for OSD Sync. signal.
53	4fsc IN	I	Generating a blue background.
54	COMPOSITE SYNC.	I	<ul style="list-style-type: none"> <li>- Receives composite signal from Y/C circuit.</li> <li>- Separates V-sync and H-sync in the OSD internal block.</li> <li>- The sync signal determines the character position of OSD.</li> </ul>
55	CTL GAIN ADJ	O	Level control for PB CTL. (to CTL control circuit)
56	SHC/MEC "H"	O	Y/C processing of Video signal at SCAM/MESECAM. (to Y/C)
57	CST IN	I	<ol style="list-style-type: none"> <li>1. Port to detect CST(cassette tape) switch input state.</li> <li>2. With CST S/W input state, determines whether CST tape is inserted or not.</li> </ol>
58	SCART "H"	O	SCART 8 pin level control to GND or 12V. (to SCART 1)
59	VIDEO Mute "H"	O	High "H" applied, turns on the OSD or POWER.
60	POWER CONTROL "H"	O	<ol style="list-style-type: none"> <li>1. A signal to switch voltages (5.3V, 12V) on/off which is controlled by the power key.</li> <li>2. Outputs "H" in power On mode. Outputs "L" in power Off mode.</li> </ol>
61	CAPSTAN REVERSE	O	A signal to control capstan motor's direction of rotation. "L" output = reverse direction. "H" output = forward direction.
62	AUDIO MUTE "H"	O	<ol style="list-style-type: none"> <li>1. Outputs "H" to mute audio signal in search mode and without sync signal.</li> <li>2. Outputs "H" to eliminate pop noise generated in each mode during early switching point (Approx. 500ms) (EE/VV, TUNER/LINE, POWER ON/OFF, CH. UP/DOWN etc.)</li> </ol>
63	TU SEC "H"	O	Now TUNER system is SECAM-L. (to TUNER)
64	16:9 "H"	O	SCART 8 pin level control to GND or 7V. (to SCART 1)
65	TSS "L"	O	Output chip enable signal for ACSS IC (IC5A1)
66	THER "H"	O	POWER switching of VPS I.C Vdd in POWER off state.
67	OPT RITC (CTL MON)	I	<ol style="list-style-type: none"> <li>1. Outputs "H" to mute <u>speakez</u>.</li> <li>2. Outputs "H" to eliminate pop noise generated in <u>speakez</u>.</li> </ol>
68	TEST (GND)	—	GND.
69	X-TAL 2	O	<ol style="list-style-type: none"> <li>1. 32.768 kHz oscillator is used as standard clock for clock display.</li> </ol>
70	X-TAL 1	I	<ol style="list-style-type: none"> <li>2. When Vcc supplied, oscillation occurs.</li> </ol>
71	Vss	—	$\mu$ -COM main ground.
72	OSC 1	I	<ol style="list-style-type: none"> <li>1. 10MHz oscillator is used to generate the standard clock used to operate the <math>\mu</math>-COM.</li> </ol>
73	OSC 2	O	<ol style="list-style-type: none"> <li>2. When Vcc is applied, Oscillation occurs. (But, when "L" is applied to pin 89 in power failure, Oscillation stops.)</li> </ol>

Pin No.	Pin Name	I/O	Description										
74	MODE SW4	I	1. Port to detect the mechanism's position. 2. Deck and Mode SW Positions.										
			No.	MODE SW4	MODE SW3	MODE SW2	MODE SW1	DECK POSITION NAME					
			1	L	H	L	H	RETURN					
			2	L	L	L	H	EJECT					
			3	L	L	H	L	ULC					
			4	L	H	H	L	LOADING START					
			5	H	H	L	L	LOADING END					
			6	H	L	L	L	TUNE					
			7	H	L	H	H	REV					
			8	H	L	H	H	PLAY					
75			9	H	L	L	H	STOP					
			10	H	H	L	H	FF, REW					
	MODE SW3	I	* Description of Deck Positions										
			RETURN	Cassette insertion standby mode									
			EJECT	For cassette insertion and ejection									
			ULC	Mode in which base assemblies P2 and P3 are completely unloaded status (unloading complete)									
			LOADING START	Mode in which base assemblies P2 and P3 can load tape after cassette loading is completed.									
			LOADING END	Mode in which base assemblies P2 and P3 have completely loaded tape. Also used for "power off mode".									
			NONE	None									
			REV	"REV" or "-SLOW" mode									
			PLAY	"Playback/Still/Slow/Stop" mode.									
			BRAKE	Mode that drives the brake (take-up, supply) to stop tape during "fast forward" or "rewind".									
77	MODE SW1	I	FF, REW	"Fast forward" or "Rewind" mode									
78	I-LIMIT	I	1. Input signal for stopping capstan motor. 2. When this port inputs "L", the capstan motor stops.										
79	REC "H"	O	1. When REC mode is operating normally, outputs "H". 2. Switched to REC mode by operating audio, Y/C pre-amp. 3. Outputs "H" and record audio, video signals on the tape.										
80	CAP ACCEL "H"	O	Pulse output to control capstan motor in slow mode.										
81	DRUM ADJ	O	Pulse output to control drum motor in slow mode.										
82	R/C	I	1. This pin receives remote data through RC901, which amplifies and detects the R/C signal. 2. After input signal is decoded in u-COM (IC501), and performs related key operation.										

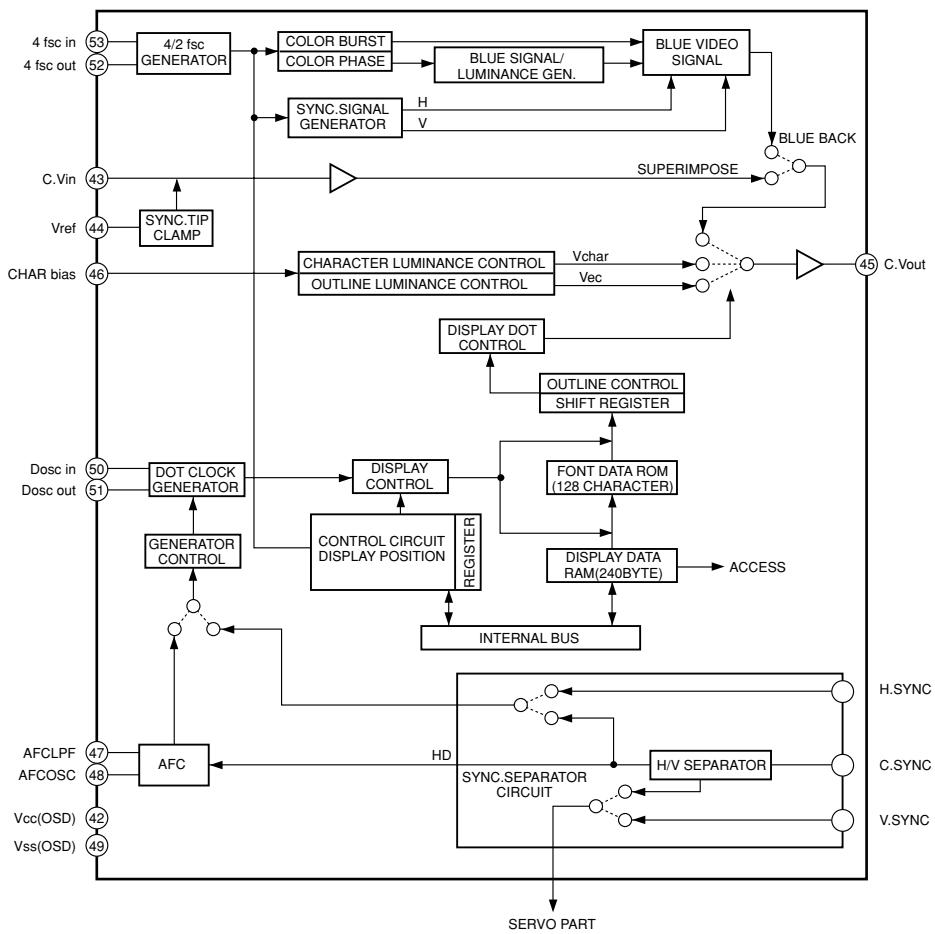


Pin No.	Pin Name	I/O	Description			
83	G4	O	The signal for each segment and grid driving in the LED Clock.			
84	G3	O				
85	G2	O				
86	G1	O				
87	COMPOSITE SYNC. (INV)	I	1. Input C-Sync (composite sync) to confirm whether video signal is present or not. 2. Confirms by counting 1H (63.5μsec) horizontal sync for a fixed time period.			
88	STAND BY "H"	O	Power switching of DIGITRON in 3W mode.			
89	POWER FAIL	I	<p>1. When a power failure is detected, this pin goes "L" and the following sequence of events occurs.</p> <p>2. Power failure detector timing sequence.</p> <table border="1"> <tr> <td>Normal operation state</td> <td>Power failure compensation state</td> <td>Power failure compensation cancel state</td> </tr> </table> <p>(μ-COM memory loss state)</p>	Normal operation state	Power failure compensation state	Power failure compensation cancel state
Normal operation state	Power failure compensation state	Power failure compensation cancel state				
90	IIC	O	A reference CLOCK for Hi-Fi, TU/IF, MTS, SPEAKER			
91	IIC	O	A reference DATA for Hi-Fi, TU/IF, MTS, SPEAKER			
92	S9	O	The signal for each segment and grid driving in the LED Clock.			
93	S8	O				
94	FLD ENABLE	O	Outputs chip enable signal for FLD Drive IC (IC5F1).			
95	FLD CLOCK	O	Outputs clock signal to operate FLD Drive IC (IC5F1).			
96	FLD DATA IN	I	Serial interface signals for FLD Drive IC control.			
97	FLD DATA OUT	O				
98	S3	O	The signal for each segment and grid driving in the LED Clock.			
99	S2	O				
100	S1	O				

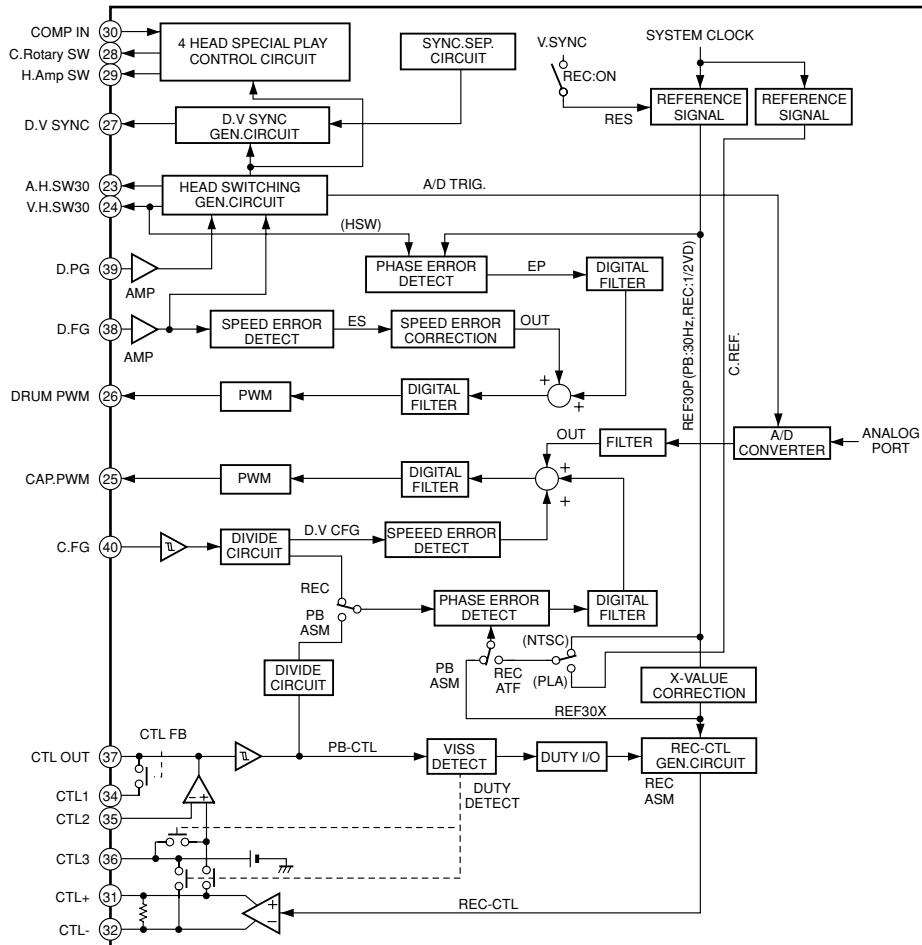
## IC BLOCK DIAGRAM

IC, HD3977RC17F

## <OSD Section>

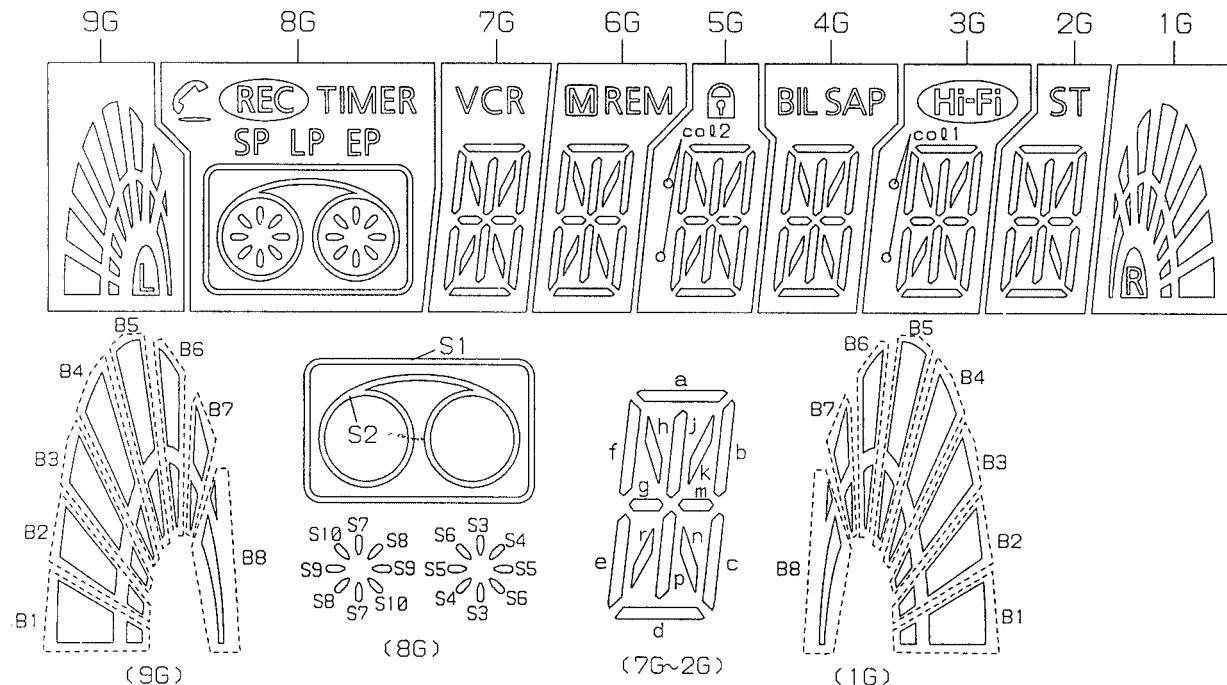


## <SERVO Section>



## FL DISPLAY

### • GRID ASSIGNMENT



### • ANODE CONNECTION

	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	-	<b>TIMER</b>	<b>VCR</b>	<b>M</b>	<b>LOCK</b>	<b>SAP</b>	<b>Hi-Fi</b>	<b>ST</b>	-
P2	-	<b>REC</b>	-	<b>REM</b>	col2	<b>BIL</b>	col1	-	-
P3	B4	<b>EP</b>	a	a	a	a	a	a	B4
P4	B5	<b>LP</b>	h	h	h	h	h	h	B5
P5	B6	<b>SP</b>	j	j	j	j	j	j	B6
P6	B7		k	k	k	k	k	k	B7
P7	B8	S1	b	b	b	b	b	b	B8
P8	B3	S2	f	f	f	f	f	f	B3
P9	B2	S3	m	m	m	m	m	m	B2
P10	B1	S4	g	g	g	g	g	g	B1
P11	<b>L</b>	S5	c	c	c	c	c	c	<b>R</b>
P12	-	S6	e	e	e	e	e	e	-
P13	-	S7	r	r	r	r	r	r	-
P14	-	S8	p	p	p	p	p	p	-
P15	-	S9	n	n	n	n	n	n	-
P16	-	S10	d	d	d	d	d	d	-

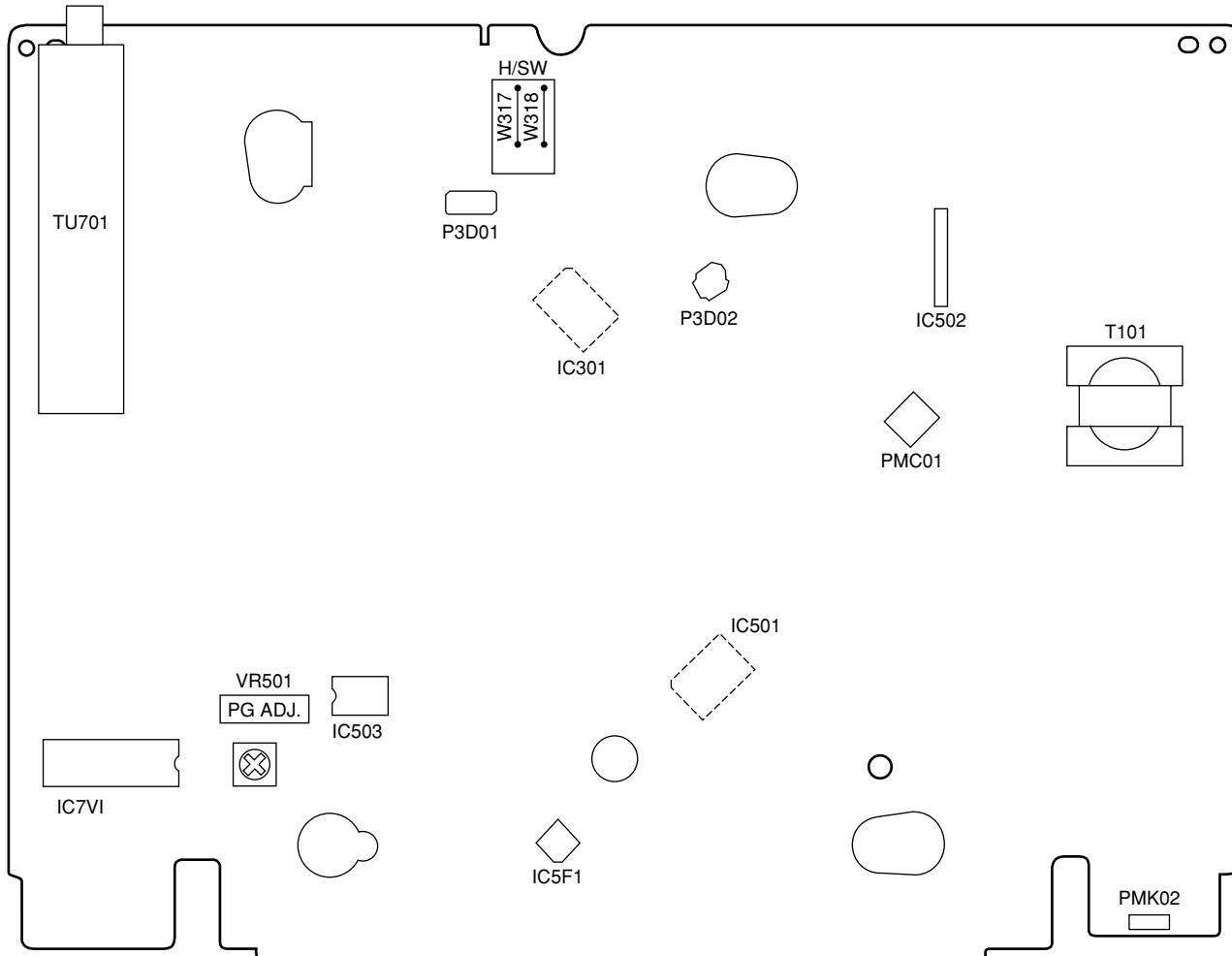
## ADJUSTMENT

### Test Equipment

- Oscilloscope
- AC Millivolt Meter
- Test Tape
- TTV-P1

### Adjustment Location

#### MAIN C.B (TOP VIEW)



## 1. Servo Adjustment

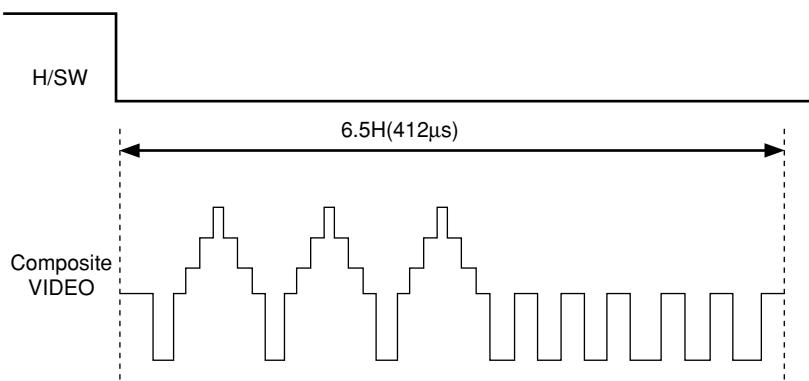
### 1) PG Adjustment

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY (TTV-P1)	VIDEO OUT H/SW (W317, W318)	VR501	$6.5 \pm 0.5H$

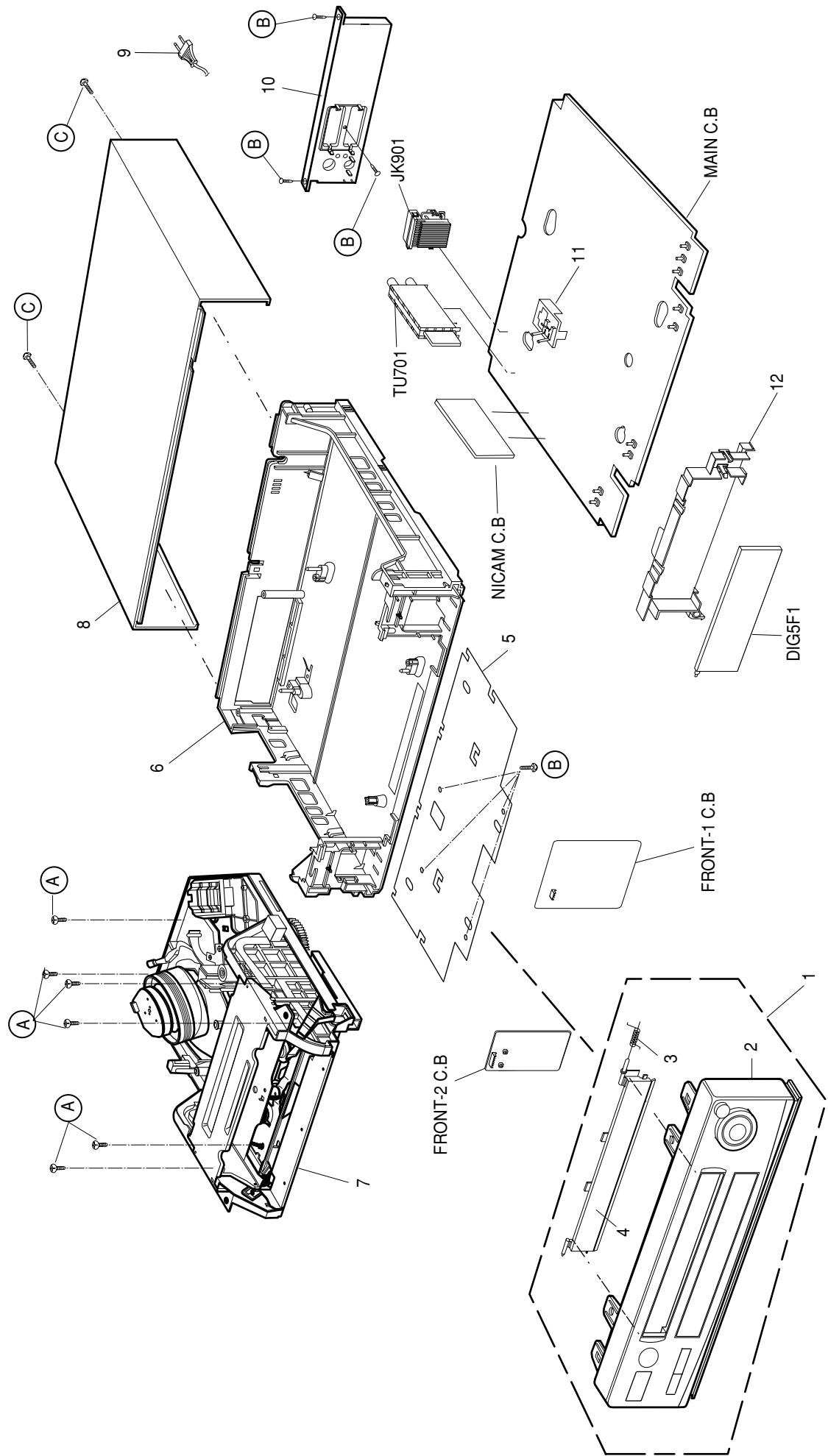
• Adjustment Procedure

1. Insert the PAL SP Test Tape (TTV-P1) and play.  
Note - Adjust the distance of X, pressing the Tracking (+) or Tracking (-) when the "ATR" is blink after the PAL SP Test Tape is inserted.
2. Connect the CH1 of the oscilloscope to the H/SW (W317, 318) and CH2 to the Video Out for the VCR.
3. Trigger the mixed Video Signal of CH2 to the CH1 H.SW (W317, W318), and then check the distance (time difference), which is from the selected A (B) Head point of the H.SW (W317, W318) signal to the starting point of the vertical synchronized signal, to  $6.5 H \pm 0.5 H$  ( $412 \mu s$ ,  $1H = 63.5 \mu s$ ).

• WAVEFORM



MECHANICAL EXPLODED VIEW 1/1



## MECHANICAL MAIN PARTS LIST 1/1

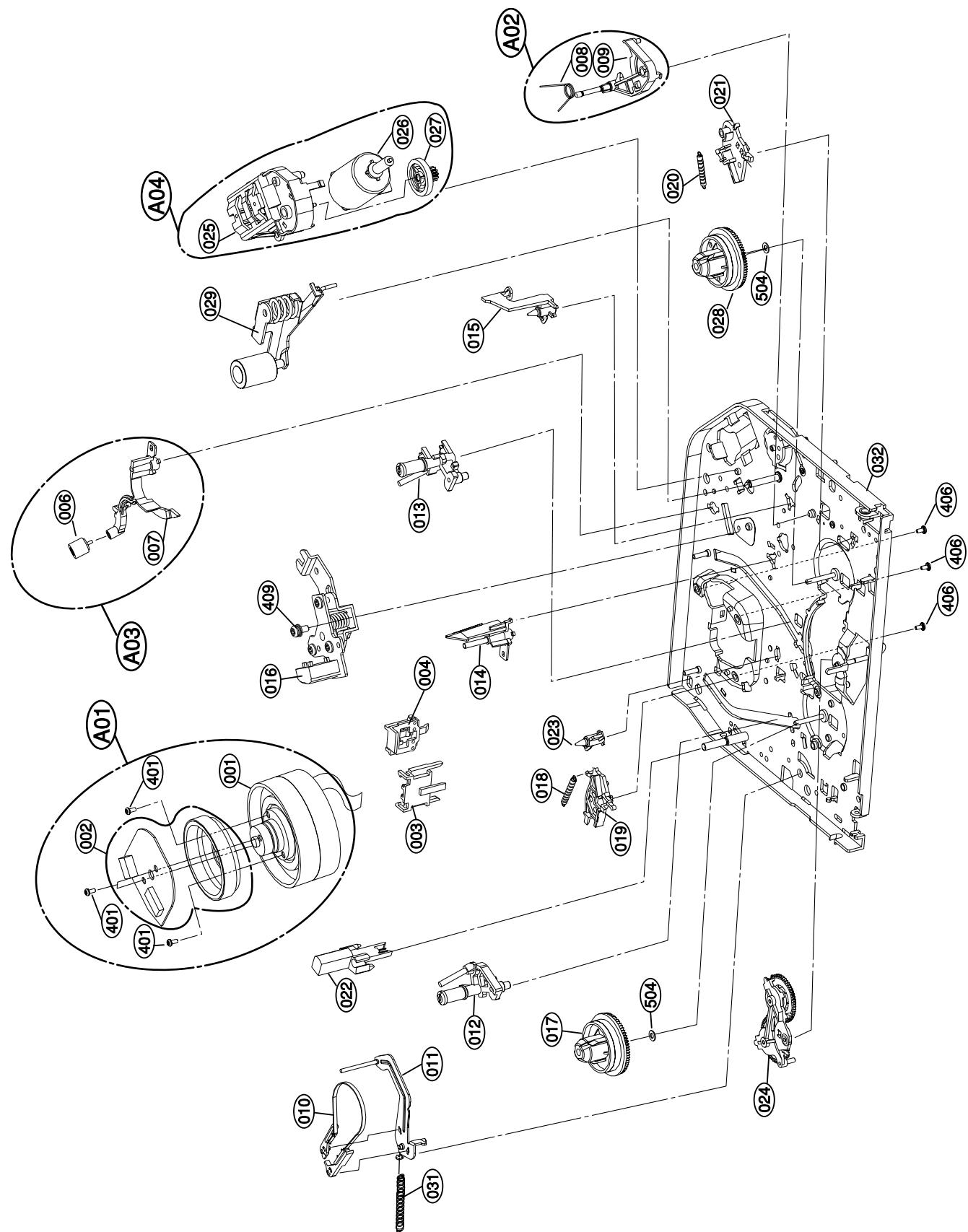
DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	S7-21R-F09-4L0		PANEL ASSY, FRONT[NO
2	---		FRONT PANEL
3	S4-426-81A-000		SPR, DOOR
4	S5-80R-003-3M0		DOOR CST
5	S5-50R-021-0A0		COVER BOTTOM
6	S2-10R-002-3D0		FRAME MAIN
7	---		DECK ASSY D33 4HF
8	S1-10R-012-8K0		CASE TOP
9	S4-10R-CHD-01A		POWER CORD
10	S7-21R-D02-3P0		PANEL ASSY DISTRIBU
11	S1-11R-008-9B0		CASE ASSY
12	S9-30R-013-3B0		HOLDER DIGITRON
A	87-741-097-410		SCREW, 3-12
B	S3-530-51A-000		SCREW, SPECIAL
C	S3-531-36A-000		SCREW, SPECIAL(FBK)

## COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

# MECHANISM EXPLODED VIEW 1/3

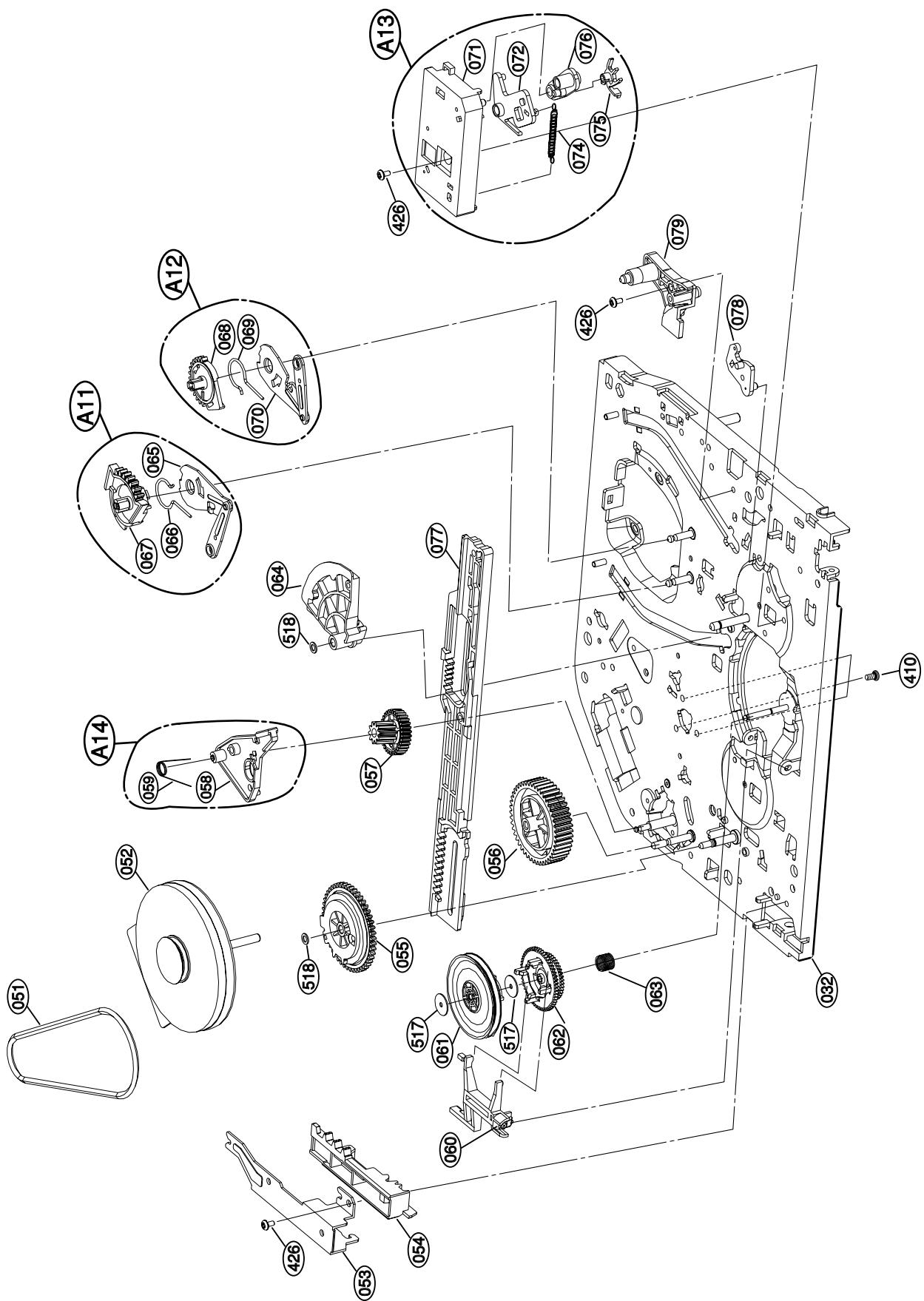


## MECHANISM MAIN PARTS LIST 1/3

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
001	S7-23R-010-6D0		DRUM ASSY SUB D33-6CH	022	S5-238-33B-000		HEAD FE D33
002	S6-80R-000-2A0		MOTOR(MECH)	023	S9-80R-001-0A0		SUPPORTER CST
002	S6-80R-A00-03A		MOTOR(MECH)	024	S2-61R-000-9A0		ARM ASSY IDLER-J
002	S6-80R-B00-04A		MOTOR(MECH)	025	S8-10R-005-3A0		BRACKET L/D MOTOR
002	S6-80R-B00-05A		MOTOR(MECH) DRUM GVD-033A	026	S6-81R-000-7A0		MOTOR ASSY L/D
003	S9-30R-010-8A0		HOLDER FPC(6CH)	027	S4-70R-002-5A0		GEAR WHEEL
004	S0-06R-001-4A0		CAP,FPC	029	S2-61R-001-1A0		ARM ASSY PINCH
004	S0-06R-002-0A0		CAP,FPC	029	S2-61R-001-1B0		PINCH ARM ASSY
006	—		ROLLER CLEANER	031	S9-70R-005-2A0		SPRING TENSION
007	—		ARM CLEANER	032	S1-41R-000-2A0		CHASSIS ASSY
009	S9-70R-004-3A0		SPRING T/UP	032	S1-41R-000-2B0		CHASSIS ASSY D33
010	S7-70R-000-4A0		BAND ASSY TENSION(MECH)	406	87-261-094-410		PAN HEAD SCREW 3-6
011	S2-61R-000-4A0		ARM ASSY TENSION	409	87-741-095-410		SCREW,PAN HEAD 3.0-8.0
012	S0-41R-000-3A0		BASE ASSY P2	504	S3-540-01B-000		WASHER,P.S 3.1-6-0.5
012	S0-41R-000-3B0		BASE ASSY P2	A01	—		DRUM ASSY D33-6CH
013	S0-41R-000-4A0		BASE ASSY P3	A01	—		DRUM(CIRC) ASSY D33-6CH
013	S0-41R-000-4B0		BASE ASSY P3	A02	S2-61R-001-2B0		T/UP ARM ASSY
014	S0-41R-000-7A0		BASE ASSY P4	A03	S2-61R-000-3A0		ARM ASSY CLEANER
015	S8-70R-000-1A0		OPENER LID	A03	S2-61R-001-5A0		CLEANER ARM ASSY
016	S0-41R-000-5A0		BASE ASSY A/C HEAD	A04	—		BRACKET ASSY L/D MOTOR
018	S9-70R-005-4A0		SPRING SB				
019	S4-21R-000-3A0		BRAKE ASSY S				
020	S9-70R-005-3A0		SPRING TB				
021	S4-21R-000-4A0		BRAKE ASSY T				
022	S5-238-33C-000		FE HEAD				

MECHANISM EXPLODED VIEW 2/3

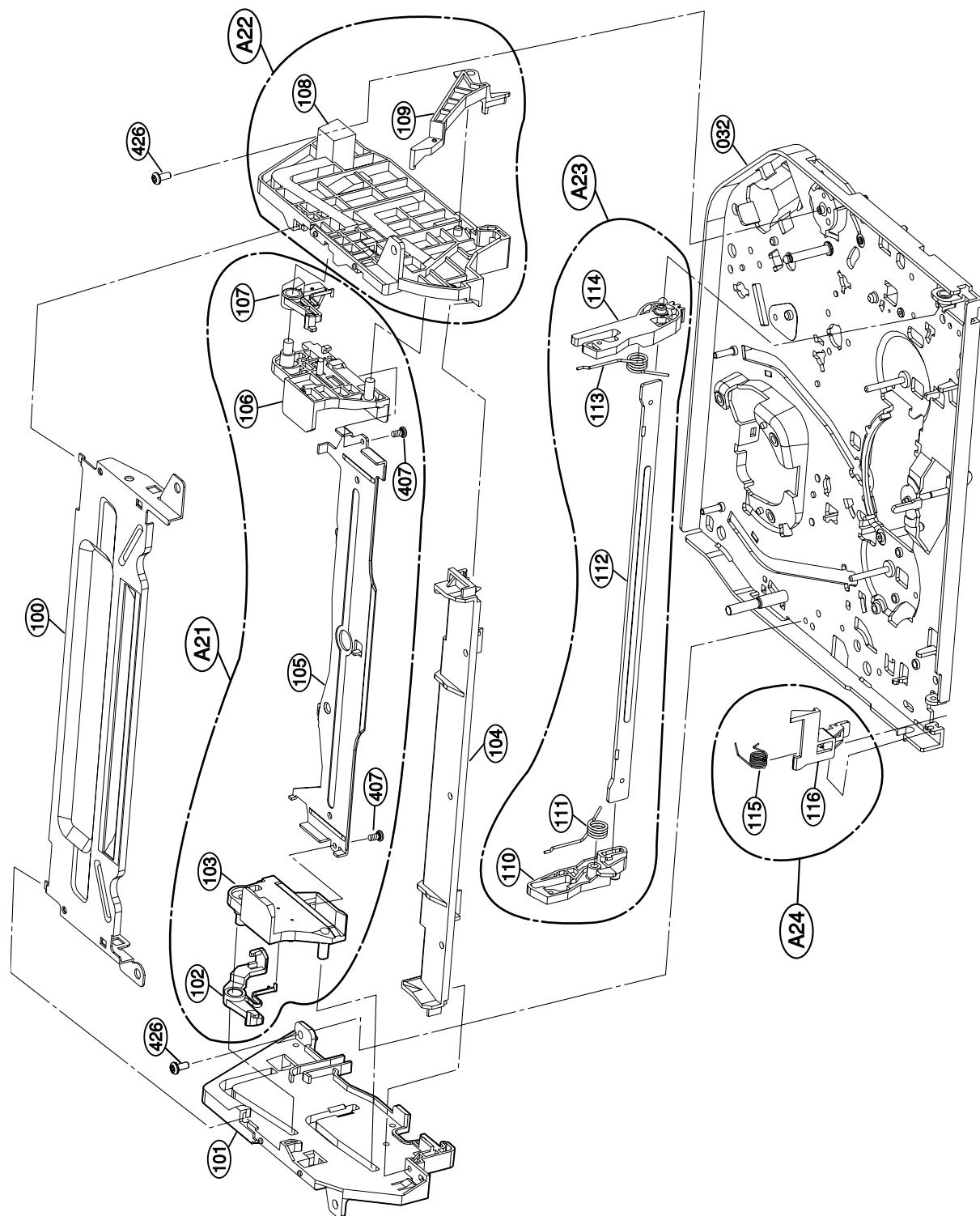


## MECHANISM MAIN PARTS LIST 2/3

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
032	S1-41R-000-2A0		CHASSIS ASSY	071	—		BRACKET JOG
032	S1-41R-000-2B0		CHASSIS ASSY D33	072	—		LEVER JOG
051	S4-00R-000-5A0		BELT CAPSTAN	074	S9-70R-004-9A0		SPRING JOG
052	S6-80R-000-2A0		MOTOR(MECH)	075	—		GEAR JOG
052	S6-80R-A00-03A		MOTOR(MECH)	076	—		ARM JOG
052	S6-80R-B00-04A		MOTOR(MECH)	077	S3-00R-015-7A0		PLATE SLIDER
052	S6-80R-B00-05A		MOTOR(MECH) DRUM GVD-033A	078	S5-10R-002-2A0		LEVER TENSION
053	S9-74R-001-8A0		GUIDE RACK F/L	079	S0-40R-001-8A0		BASE TENSION
054	S4-70R-003-7A0		GEAR RACK F/L	410	SA-PFO-262-218		SCREW, PAN HEAD 2.6-6.8
055	S4-70R-003-3A0		GEAR DRIVE	426	87-261-094-410		PAN HEAD SCREW 3-6
056	S4-70R-003-2A0		GEAR CAM	517	SW-ZZR-000-4B0		WASHER STOPPER
057	S4-70R-003-6B0		GEAR CONNECT	518	SW-ZZR-000-4A0		WASHER STOPPER
058	—		BRAKE CAPSTAN	A11	S4-70R-002-8A0		GEAR ASSY P3
059	S9-70R-005-9A0		SPRING CAPSTAN	A12	S4-70R-002-6A0		GEAR ASSY P2
060	S5-10R-002-5B0		F/R LEVER	A13	S8-11R-001-2A0		BRACKET ASSY JOG
061	S2-65R-000-2A0		CLUTCH ASSY	A13	S8-11R-001-2B0		JOG BRACKET ASSY
062	S4-70R-004-4A0		GEAR ASSY UP/D	A14	S4-21R-000-5C0		CAPSTAN BRAKE ASSY
063	S9-70R-005-1A0		SPRING UP/D				
064	S4-70R-003-4A0		GEAR SECTOR				
065	—		LEVER P3				
066	—		SPRING L/D				
067	—		GEAR P3				
068	—		GEAR P2				
069	—		SPRING L/D				
070	—		LEVER P2				

MECHANISM EXPLODED VIEW 3/3



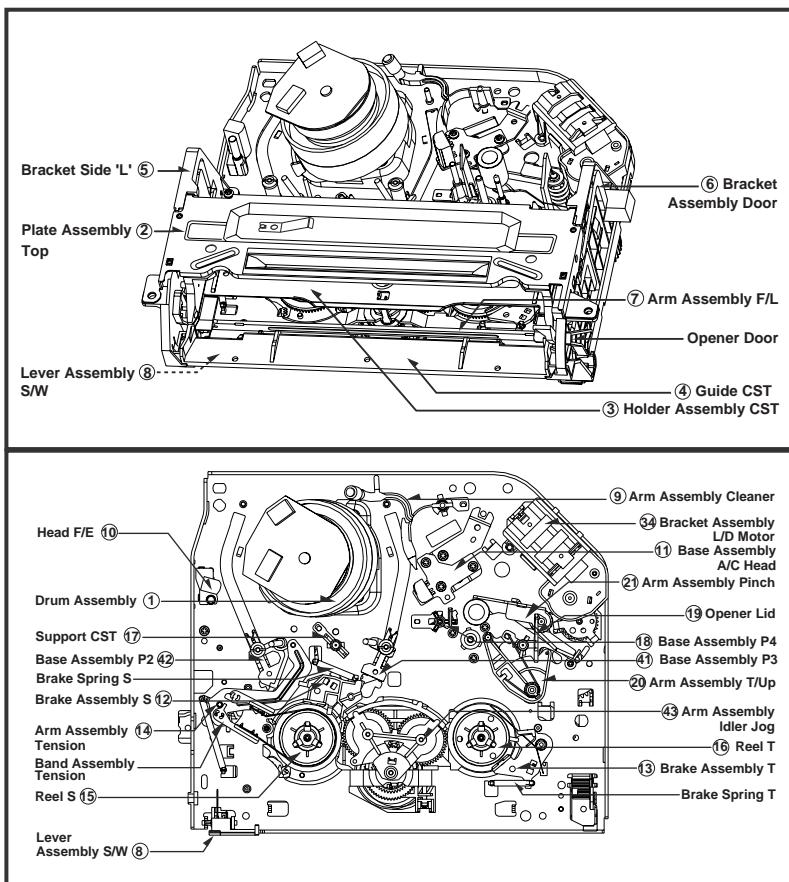
## MECHANISM MAIN PARTS LIST 3/3

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
032	S1-41R-000-2A0		CHASSIS ASSY	113	—		SPRING F/L(R)
032	S1-41R-000-2B0		CHASSIS ASSY D33	114	—		RM F/L(R)
100	S3-01R-002-9A0		PLATE ASSY TOP	115	S9-70R-005-0A0		SPRING SWITCH
101	S8-10R-005-6A0		BRACKET SIDE(L)	116	S5-10R-002-0A0		LEVER SWITCH
102	—		LEVER STOPPER(L)	407	87-841-034-410		SCREW PAN HEAD 2.0-5.0
103	—		HOLDER SIDE(L)	426	87-261-094-410		PAN HEAD SCREW 3-6
104	S9-74R-001-9A0		GUIDE CST	A21	S9-31R-001-5A0		HOLDER ASSY CST
105	—		HOLDER CST	A22	S8-11R-001-4A0		BRACKET ASSY
106	—		HOLDER SIDE(R)	A23	S2-61R-001-0A0		ARM ASSY F/L
107	—		LEVER STOPPER(R)	A24	S5-10R-001-9A0		LEVER ASSY SWITCH
108	—		BRACKET SIDE(R)				
109	—		OPENER DOOR				
110	—		ARM F/L(L)				
111	—		SPRING F/L(L)				
112	—		BODY F/L				

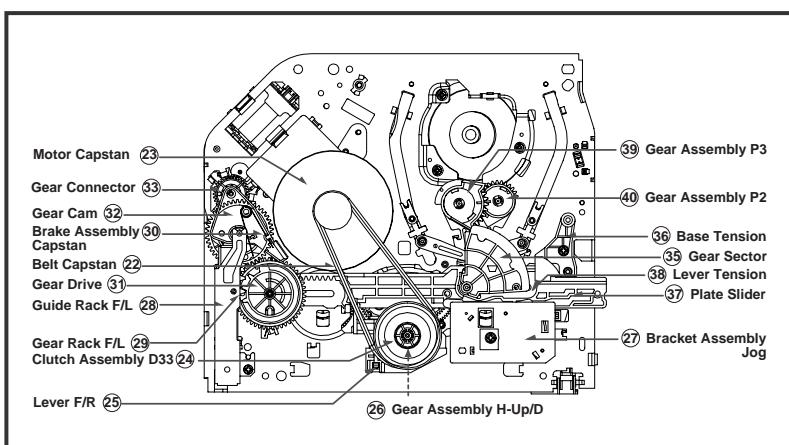
# DECK MECHANISM PARTS LOCATIONS

## • Top View



Procedure Starting No.	Part	Fixing Type	Figure
1	Drum Assembly	3 Screws, Cap FPC	A-1
2	Plate Assembly Top	Two Hooks	A-2
3	Holder Assembly CST	Chassis Hole	A-2
4	Guide CST	2 Hooks	A-2
5	Bracket Side (L)	1 Screw	A-2
6	Bracket Assembly Door	1 Screw	A-2
7	Arm Assembly F/L	Chassis Hole	A-2
8	Lever Assembly S/W	Chassis Hole	A-2
9	Arm Assembly Cleaner	Chassis Embossing	A-3
10	Head F/E	2 Hooks	A-3
11	Base Assembly A/C Head	1 Screw	A-3
12	Brake Assembly S	Chassis Hole	A-4
13	Brake Assembly T	Chassis Hole	A-4
14	Arm Assembly Tension	Chassis Hole	A-4
15	Reel S	Chassis Shaft	A-4
16	Reel T	Chassis Shaft	A-4
17	Support CST	Chassis Embossing	A-5
18	Base Assembly P4	Chassis Embossing	A-5
19	Opener Lid	Chassis Embossing	A-5
20	Arm Assembly T/Up	Chassis Embossing	A-5
21	Arm Assembly Pinch	Chassis Shaft	A-5

## • Bottom View



Procedure Starting No.	Part	Fixing Type	Figure
22	Belt Capstan	3 Screws	A-6
23	Motor Capstan	1 Washer	A-6
24	Clutch Assembly D33	2 Washers	A-6
25	Lever F/R	1 Hook	A-6
26	Gear Assembly H-Up/D	1 Screw	A-7
27	Bracket Assembly Jog	1 Screw	A-7
28	Guide Rack F/L	1 Screw	A-7
29	Gear Rack F/L	1 Washer	A-7
30	Brake Assembly Capstan	Chassis Shaft	A-7
31	Gear Drive	Chassis Shaft	A-8
32	Gear Cam	Chassis Shaft	A-8
33	Gear Connector	Chassis Shaft	A-8
34	Bracket Assembly L/D Motor	3 Hooks	A-8
35	Gear Sector	3 Washers	A-9
36	Base Tension	1 Screw	A-9
37	Plate Slider	Chassis Shaft	A-9
38	Lever Tension	Chassis Hole	A-9
39	Gear Assembly P3	2 Hooks	A-10
40	Gear Assembly P2	2 Hooks	A-10
41	Base Assembly P3	Chassis Hole	A-10
42	Base Assembly P2	Chassis Hole	A-10
43	Arm Assembly Idler Jog	1 Hook	A-10

**NOTE : When reassembly perform the procedure in the reverse order.**

- 1) When reassembling, confirm Mechanism and Mode Switch Alignment Position (Refer to Page 69)
- 2) When disassembling, the Parts for Starting No. Should be removed first.

# DECK MECHANISM DISASSEMBLY

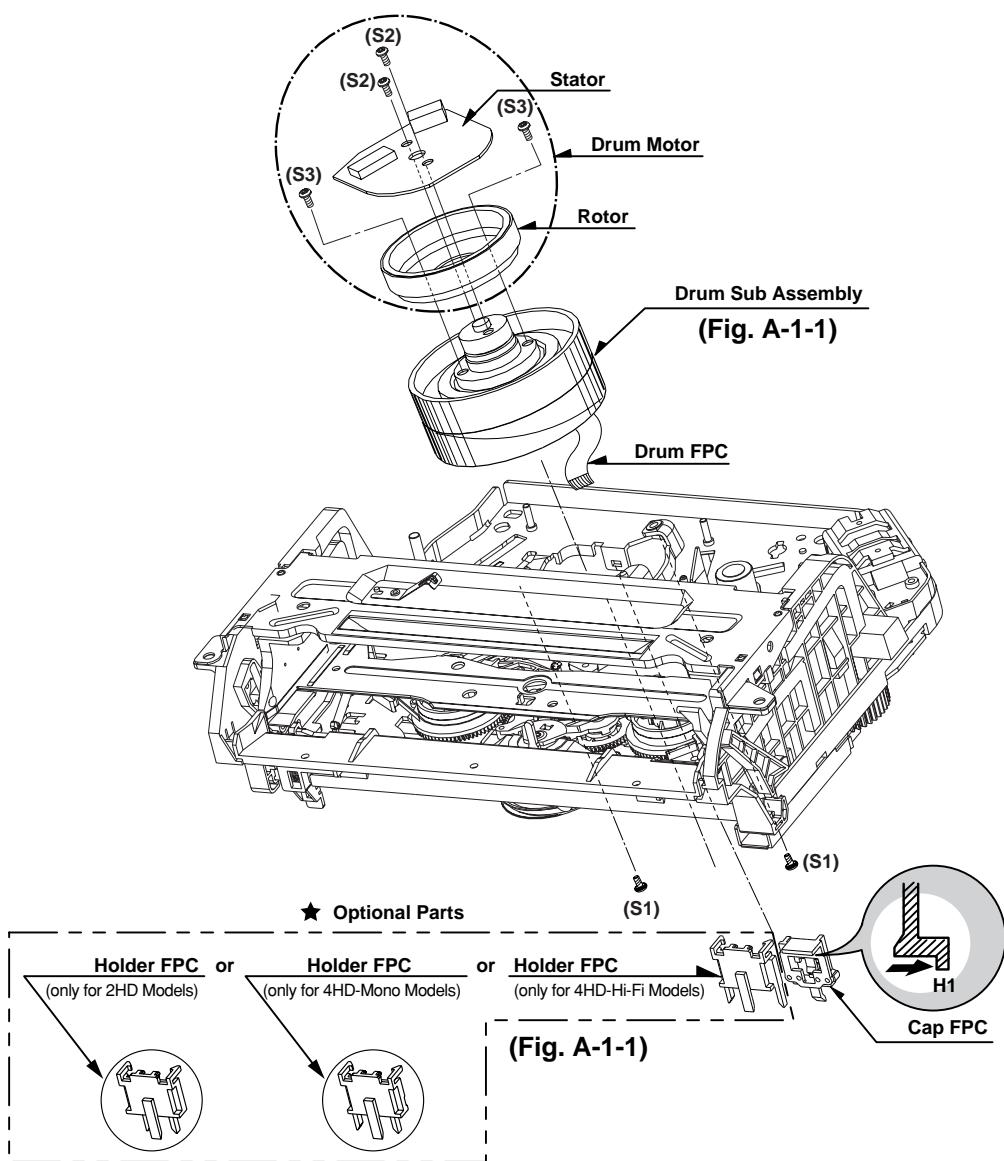


Fig. A-1

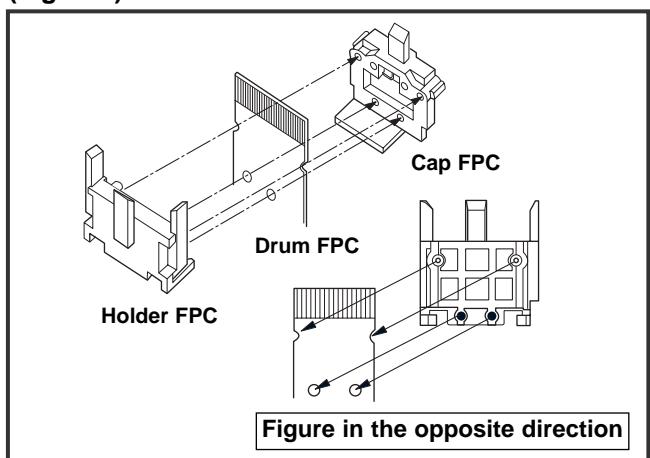
## 1. Drum Assembly (Fig. A-1-1)

- 1) Unhook the (H1) on the back side of the Chassis and separate the Cap FPC.
- 2) Remove three Screws (S1) and lift up the Drum Assembly.
- 3) Remove two Screws (S2) and Separate the Stator of Drum Motor.
- 4) Remove two Screws (S3) and Separate the Rotor of Drum Motor from the Drum Sub Assembly.

### NOTE

- (1) When reassembling Cap FPC, two Holes of Drum FPC are inserted to the two Bosses of Holder FPC correctly. (Refer to Fig. B-1)

(Fig. B-1)



# DECK MECHANISM DISASSEMBLY

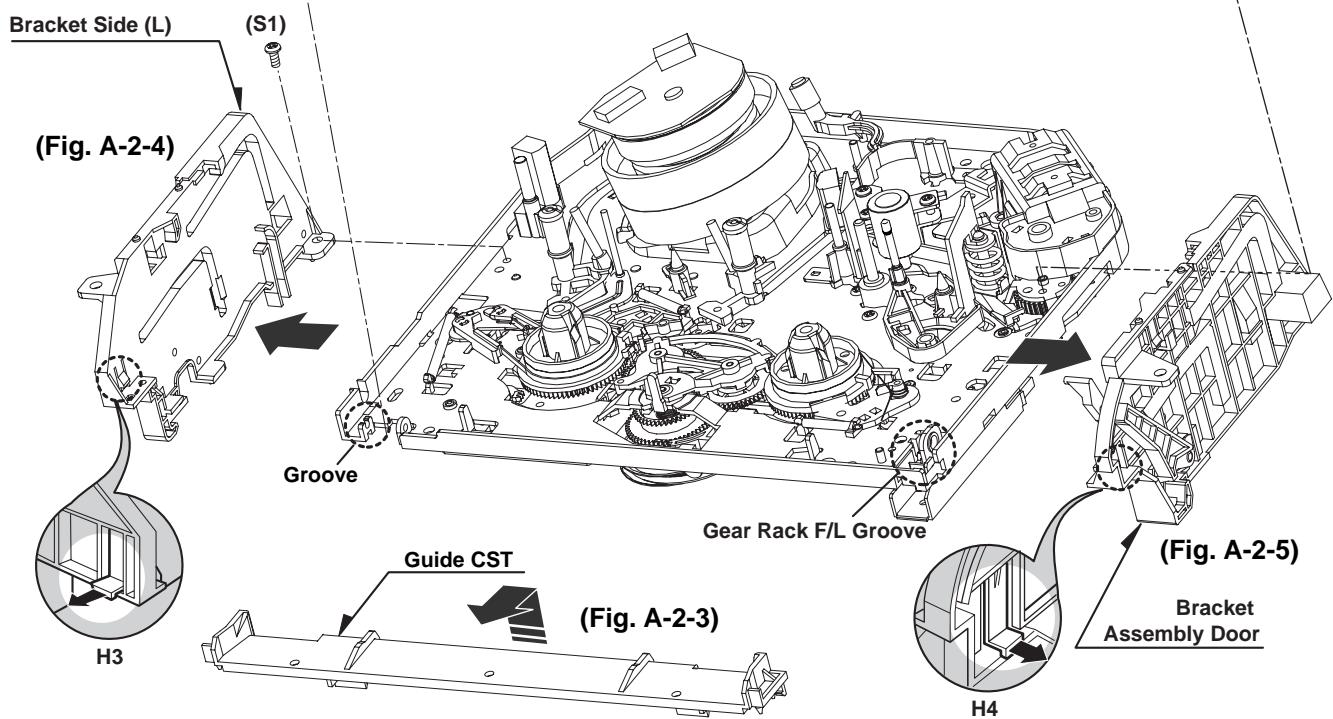
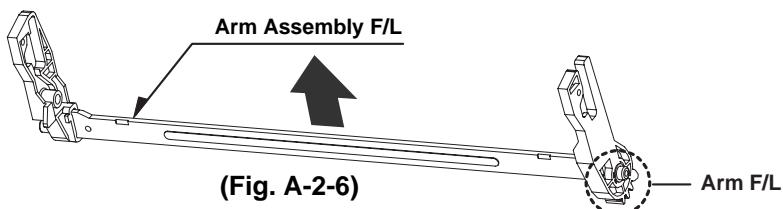
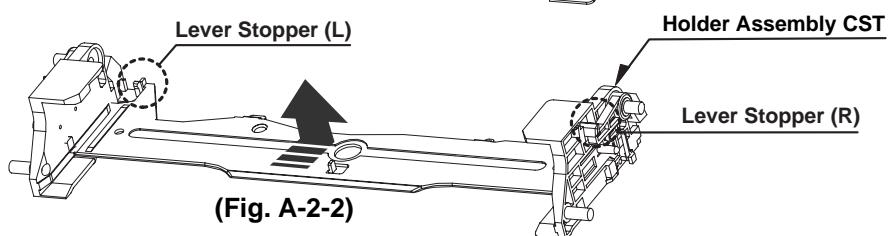
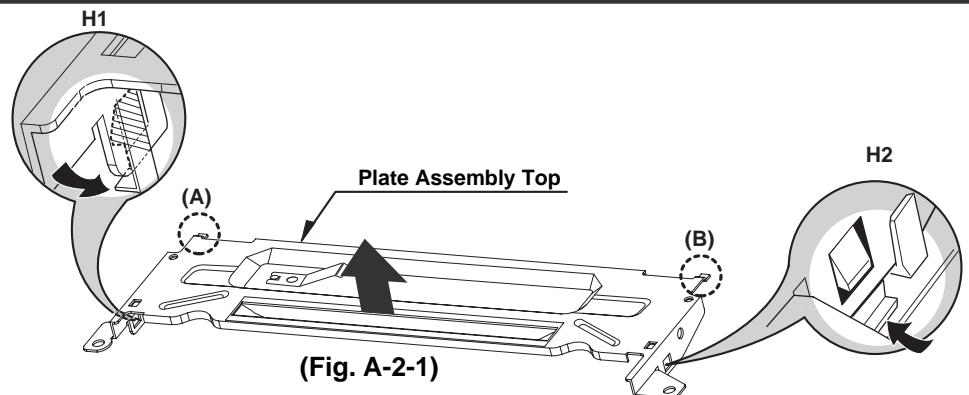


Fig. A-2

# DECK MECHANISM DISASSEMBLY

## 2. Plate Assembly Top (Fig. A-2-1)

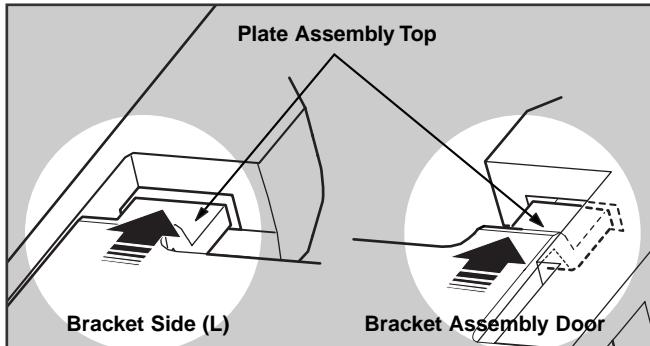
- 1) Unhook the (H1) and separate the Left Side.
- 2) Unhook the (H2) and lift up the Plate Assembly Top.

### NOTE

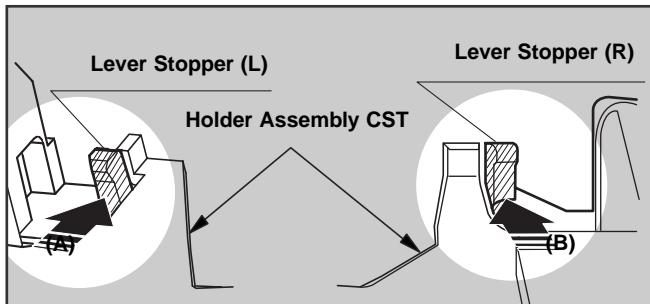
(1) When reassembling, confirm (A),(B) Part of the Plate Assembly Top is inserted to the (L),(R) Grooves of the Bracket Side(L) and Bracket Assembly Door.

## 3. Holder Assembly CST (Fig.A-2-2)

- 1) Push the Lever Stopper(L),(R) in the direction of the arrows (A), (B), and move the Holder Assembly CST.

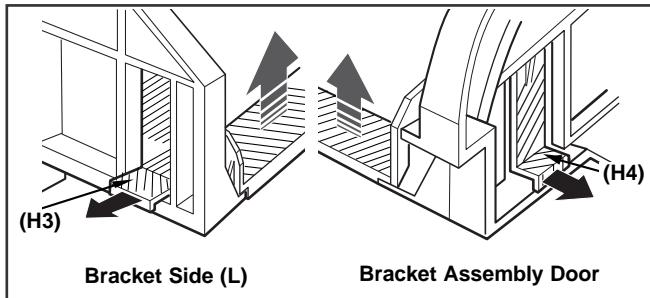


- 2) Push the Bracket Assembly Door to the right and lift up the Holder Assembly CST along the Guide Groove of the Bracket Assembly Door.



## 4. Guide CST (Fig.A-2-3)

- 1) Push two Hooks(H3),(H4) in the direction of the arrow and separate the left side.
- 2) Unhook (H5),(H6) as above No.1) and disassemble the Guide CST in the direction of the arrow.



## 5. Bracket Side(L) (Fig. A-2-4)/ Bracket Assembly Door (Fig.A-2-5)

- 1) Remove the Screw (S1) and disassemble the Bracket Side(L) in the front.

- 2) Remove the Screw (S2) and disassemble the Bracket Assembly Door in the front.

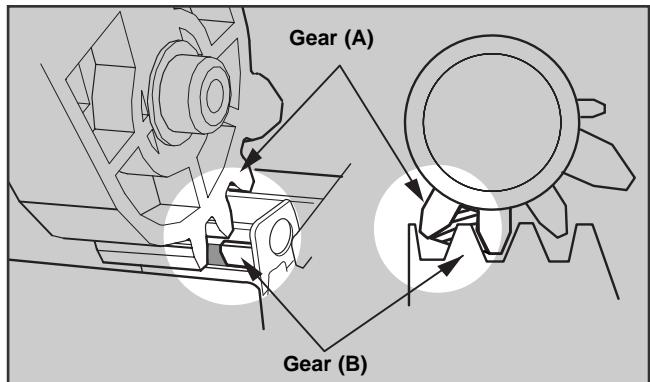
## 6. Arm Assembly F/L (Fig. A-2-6)

- 1) Push the Arm Assembly F/L to the left and lift up it.

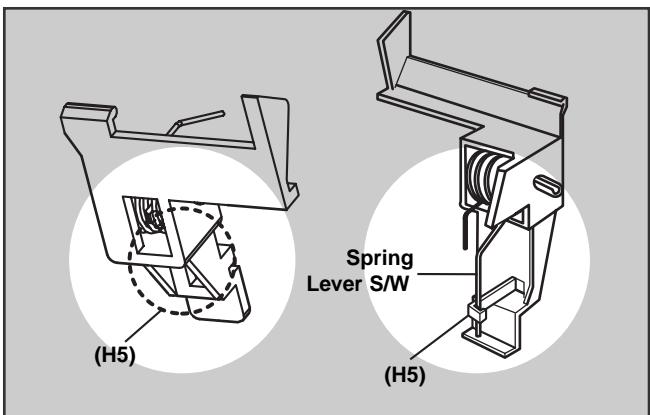
### NOTE

(1) When reassembling, confirm that the Gear(A) of the Arm F/L and the Gear(B) of the Gear Rack F/L are assembled as below.

## 7. Lever Assembly S/W (Fig. A-2-7)

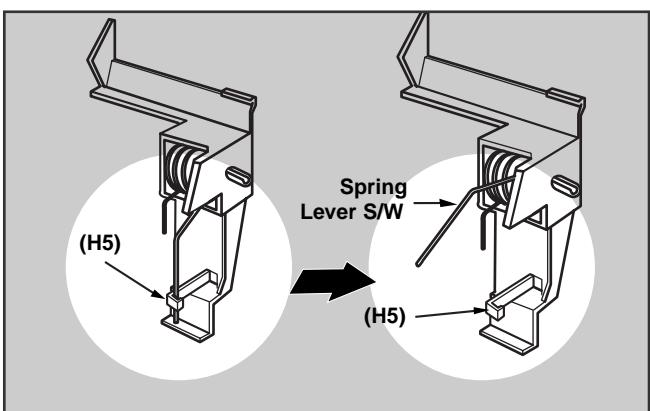


- 1) Hook the Spring Lever S/W on (H5).
- 2) Lift up the left side of the Lever S/W from the Groove(A) of the Chassis.

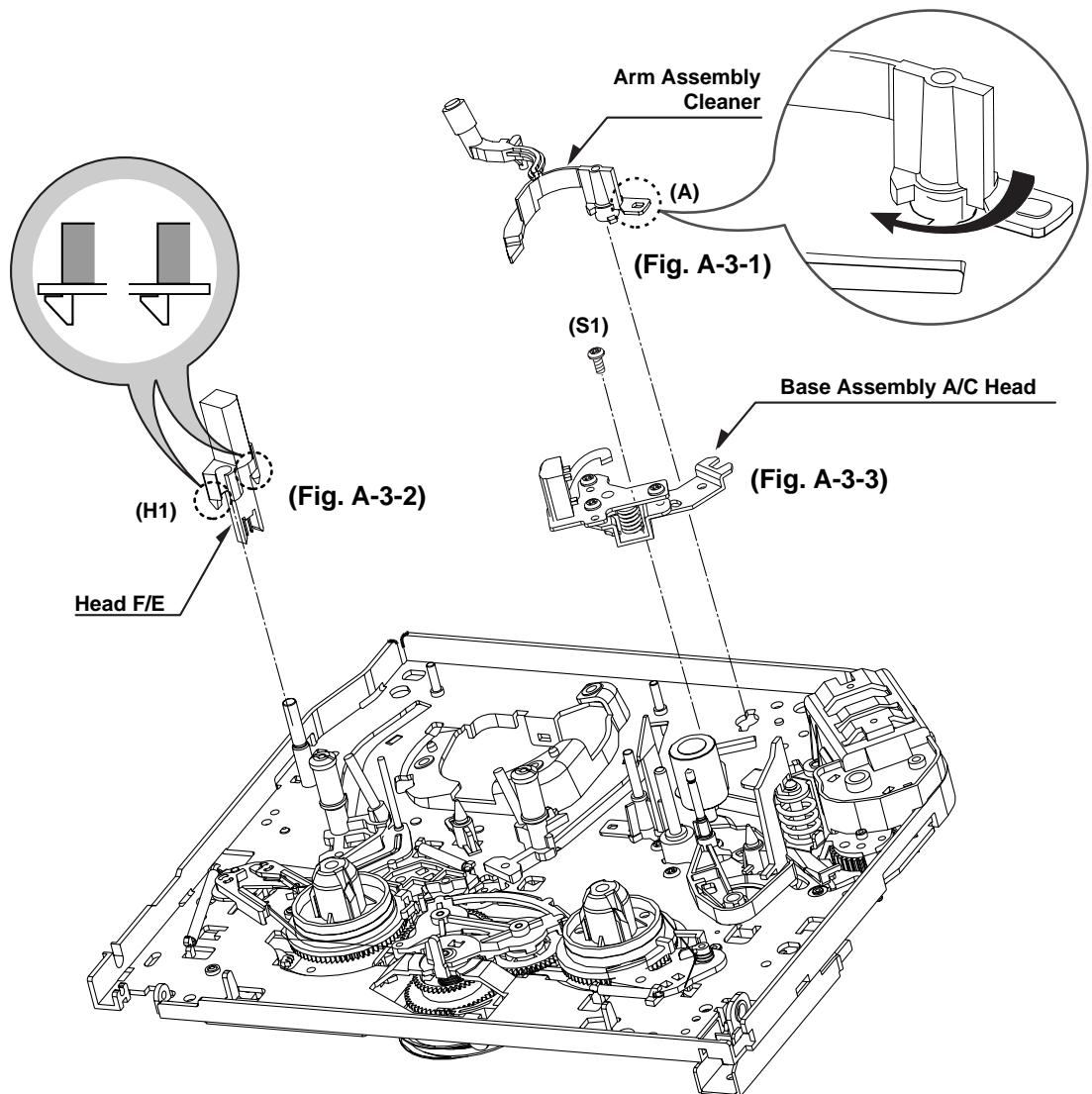


### NOTE

(1) Place the Spring Lever S/W of the above (No.1) as original position.



# DECK MECHANISM DISASSEMBLY



**Fig. A-3**

## 8. Arm Assembly Cleaner(Fig. A-3-1)

- 1) Break away the **(A)** part shown above Fig. A-3-1 from the Embossing of the Chassis in the clockwise direction and lift up the Arm Assembly Cleaner.

## 9. Head F/E (Fig. A-3-2)

- 1) Unhook the two Hooks **(H1)** on the back side of the Chassis and lift up the Head F/E.

## 10. Base Assembly A/C Head (Fig. A-3-3)

- 1) Remove the Screw **(S1)** and lift up the Base Assembly A/C Head.

# DECK MECHANISM DISASSEMBLY

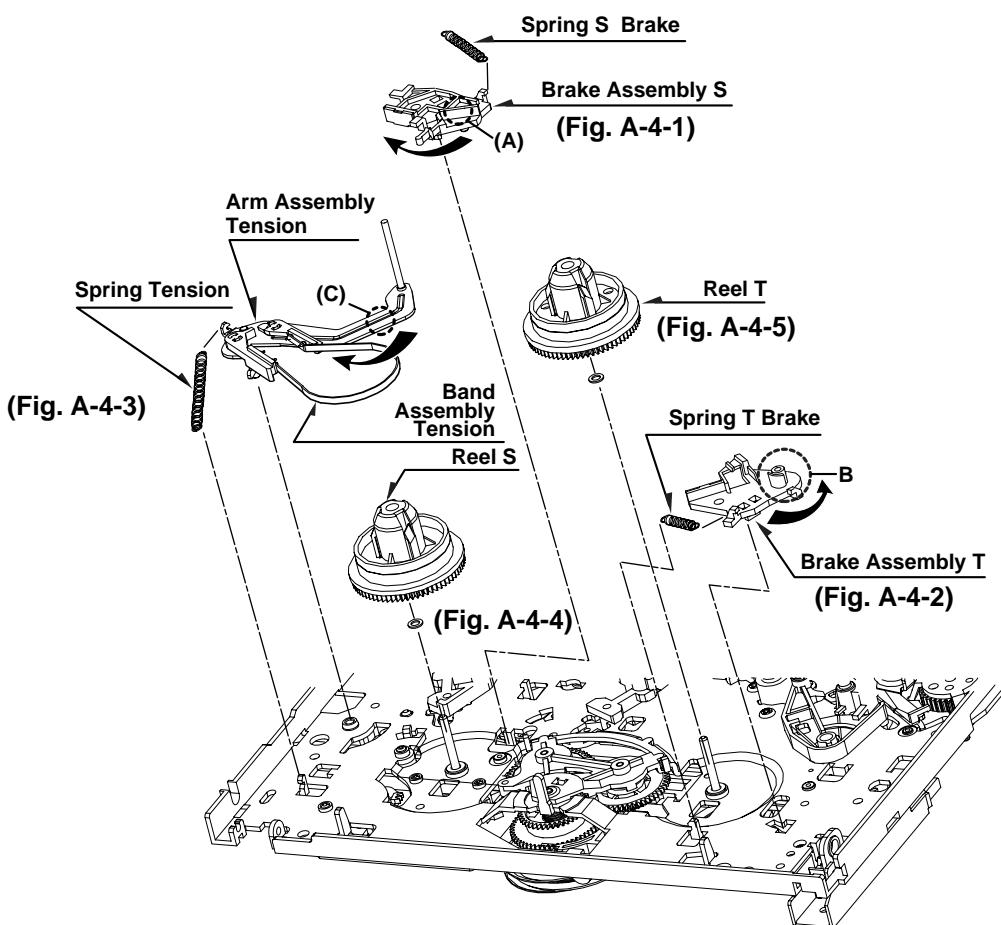


Fig. A-4

## 11. Brake Assembly S (Fig. A-4-1)

- 1) Remove the Spring S Brake.
- 2) Hold the (A) part shown above Fig. A-4-1 and turn to the clockwise direction, and then lift up the Brake Assembly S.

### NOTE

- (1) When reassembling, be careful not to change the Spring with below No.11,12.(Refer to Fig. B-2).

## 12. Brake Assembly T (Fig. A-4-2)

- 1) Remove the Spring T Brake.
- 2) Hold the (B) part shown above Fig. A-4-2 and turn to the counterclockwise direction, and then lift up the Brake Assembly T.

### NOTE

- (1) When reassembling, be careful not to change the Spring with above No.11.(Refer to Fig. B-2).

### (Difference for Springs) (Fig. B-2)

	Spring S Brake	Color (Black)
	Spring T Brake	
	Spring Tension	

## 13. Arm Assembly Tension (Fig. A-4-3)

- 1) Remove the Spring Tension.
- 2) Hold the (C) part shown above Fig. A-4-3 and turn to the clockwise direction, and then lift up the Arm Assembly Tension.

### NOTE

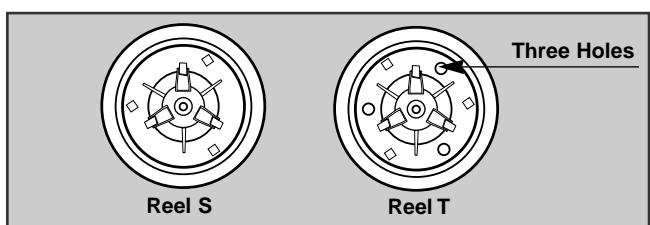
- (1) When reassembling, be careful not to change the Spring with above No.11,12.(Refer to Fig. B-2).

## 14. Reel S (Fig. A-4-4) & Reel T (Fig. A-4-5)

- 1) Lift up the Reel S and Reel T.

### NOTE

- (1) When reassembling, be careful not to change the Reel S and Reel T each other.



- (2) Confirm two Slide Washers under the Reel S and Reel T.

# DECK MECHANISM DISASSEMBLY

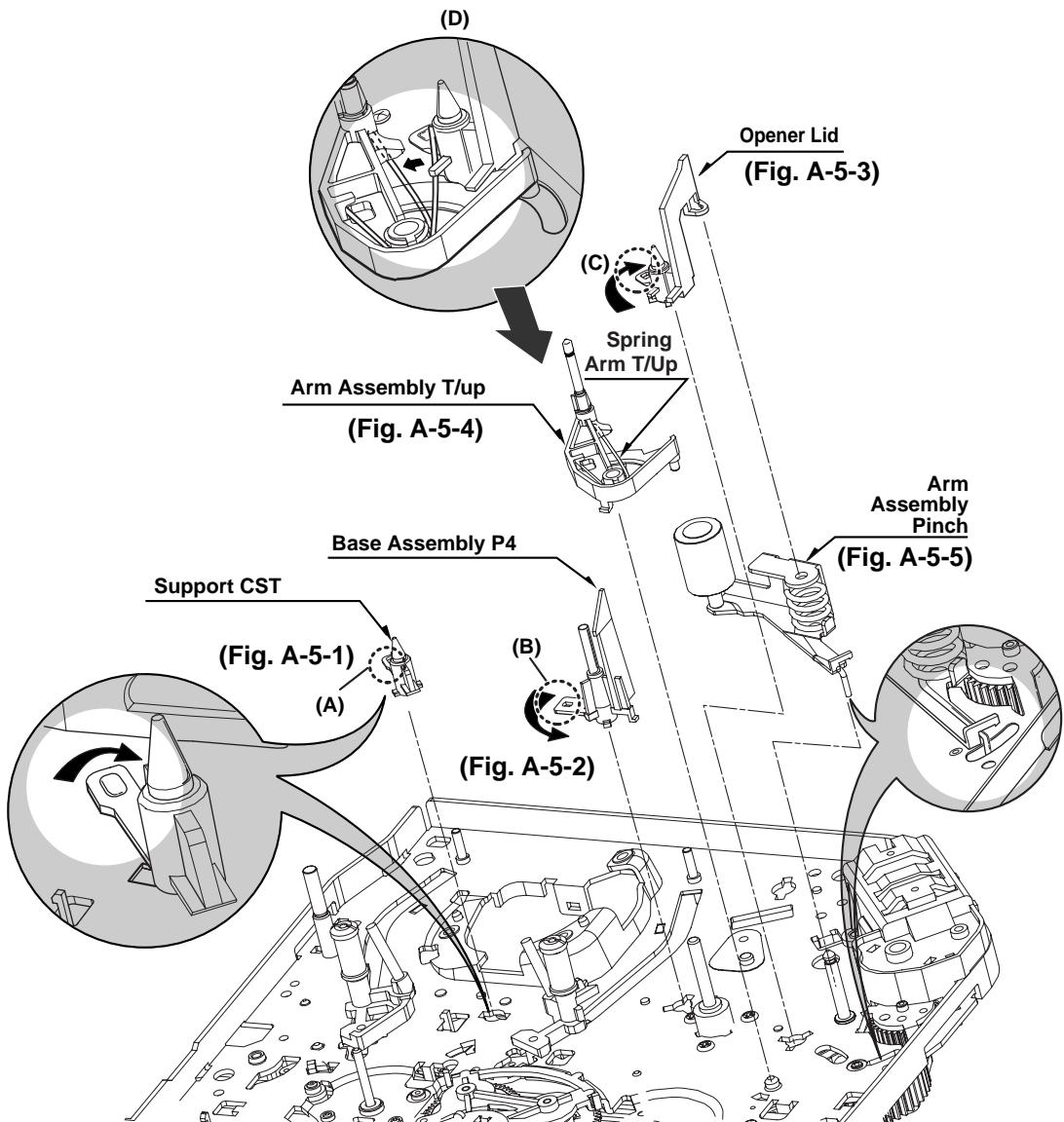


Fig. A-5

## 15. Support CST (Fig. A-5-1)

- 1) Break away the (A) part shown above Fig. A-5-1 from the Embossing of the Chassis in the clockwise direction, and lift up the Support CST.

## 16. Base Assembly P4 (Fig. A-5-2)

- 1) Break away the (B) part shown above Fig. A-5-2 from the Embossing of the Chassis in the counterclockwise direction and lift up the Base Assembly P4.

## 17. Opener Lid (Fig. A-5-3)

- 1) Hook the Spring Arm T/up on the Split digged under the Arm Assembly T/up.(Refer to Fig.A-5-4(D)).
- 2) Break away the (C) Part of the Opener Lid from the Embossing of the Chassis in the Clockwise direction and lift up the Opener Lid.

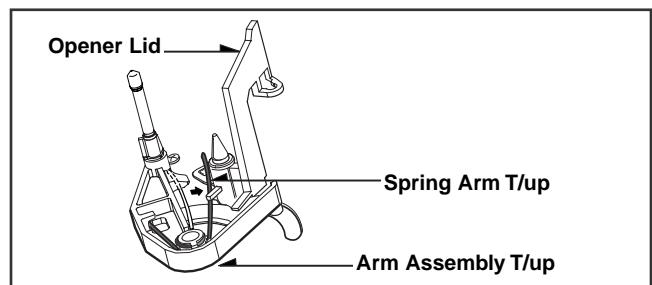
## 18. Arm Assembly T/up (Fig. A-5-4)

- 1) Confirm that the Spring Arm T/up is placed as above (No.17.1).

- 2) Lift up the Arm Assembly T/up.

### NOTE

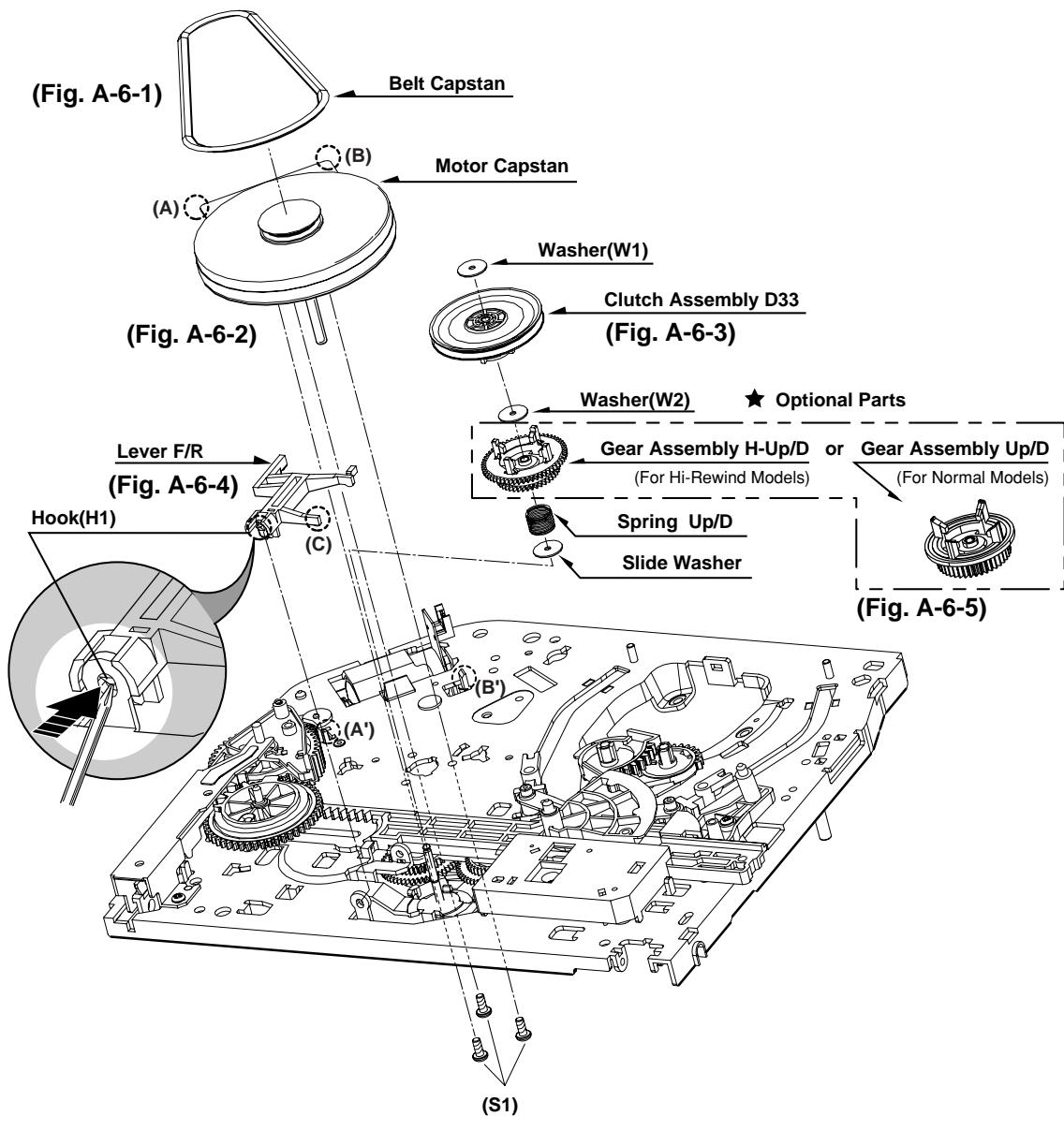
- (1) When reassembling, unhook the Spring Arm T/up Shown above (No.17.1) to the original position.



## 19. Arm Assembly Pinch (Fig. A-5-5)

- 1) Lift up the Arm Assembly Pinch.

# DECK MECHANISM DISASSEMBLY



**Fig. A-6**

## 20. Belt Capstan (Fig. A-6-1)/ Motor Capstan (Fig. A-6-2)

- 1) Remove the Belt Capstan.
- 2) Remove three Screws(S1) on the back side of the Chassis and lift up the Motor Capstan.

### NOTE

- (1) When reassembling, Confirm the (A), (B) parts of Motor Capstan is located to the (A'), (B') of the Chassis.

## 21. Clutch Assembly D33 (Fig. A-6-3)

- 1) Remove the Washer(W1) and lift up the Clutch Assembly D33.

## 22. Lever F/R (Fig. A-6-4)

- 1) Unhook the (H1) shown above Fig. A-6-4 and lift up the Lever F/R.

### NOTE

- (1) When reassembling, move the (C) part of the Lever F/R up and down, then confirm if it is returned to original position.

## 23. Gear Assembly H-Up/D or Gear Assembly Up/D (Fig. A-6-5)

- 1) Remove the Washer(W2) and lift up the Gear Assembly H-up/D.
- 2) Remove the Spring Up/D.
- 3) Remove the Slide Washer.

### NOTE

- (1) Gear Assembly H-Up/D is for Hi-Rewind Models.
- (2) Gear Assembly Up/D is for Normal Models except Hi-Rewind Models.

# DECK MECHANISM DISASSEMBLY

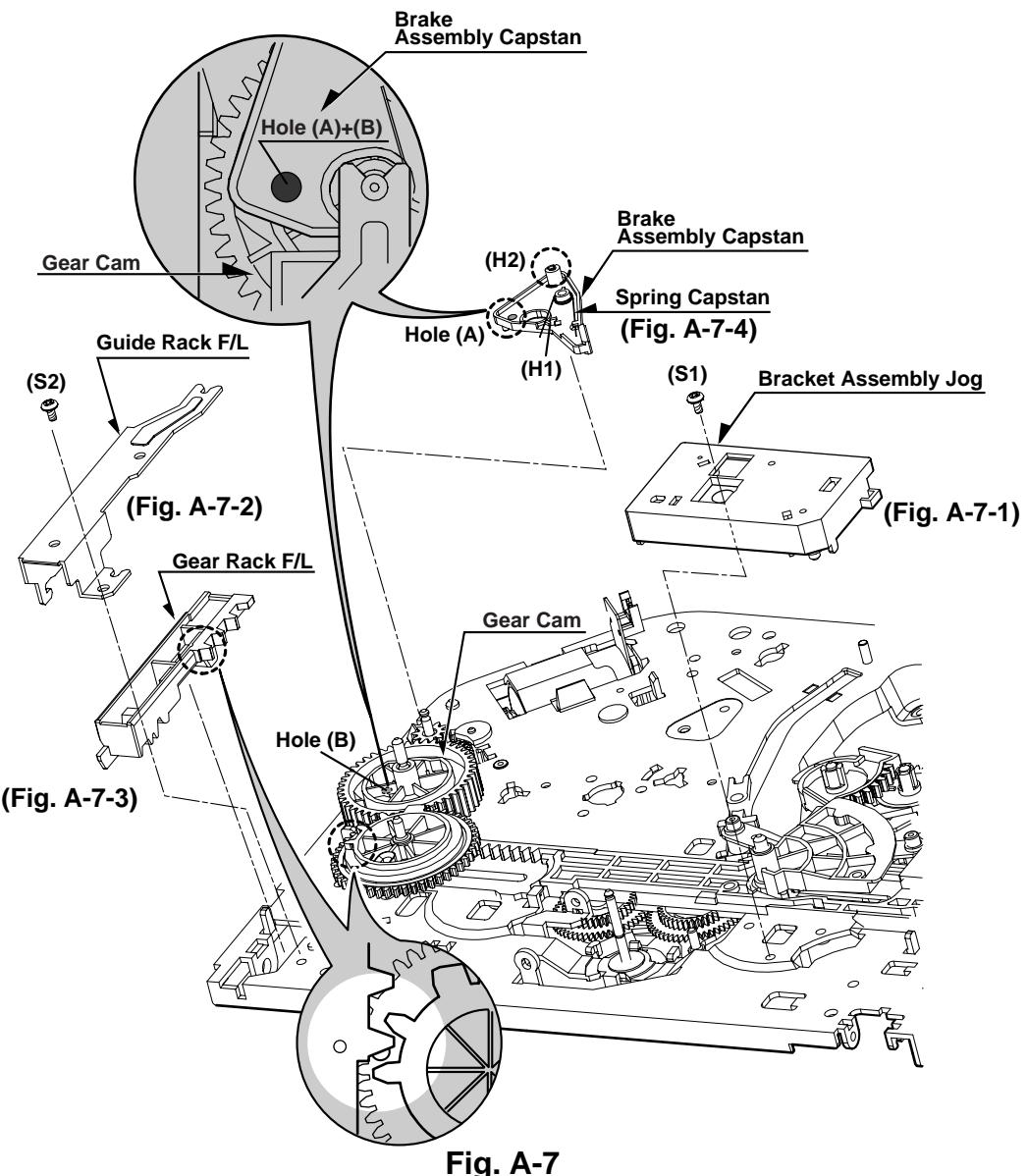


Fig. A-7

## 24. Bracket Assembly Jog (Fig. A-7-1)

- 1) Remove the Screw(S1) and lift up the Bracket Assembly Jog.

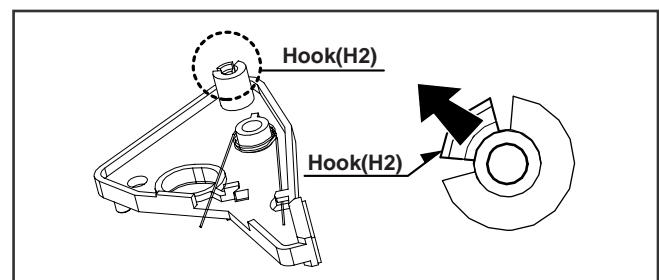
## 25. Guide Rack F/L (Fig. A-7-2)/

## Gear Rack F/L (Fig. A-7-3)

- 1) Remove the Screw(S2) and lift up the Guide Rack F/L.
- 2) Lift up the Gear Rack F/L.

## 26. Brake Assembly Capstan (Fig. A-7-4)

- 1) Hook the Spring Capstan on the Hook(H1).
- 2) Unhook the Hook(H2) and lift up the Brake Assembly Capstan.(Refer to Fig. to the right)



### NOTE

- (1) When reassembling, confirm that the Hole(A) of the Brake Assembly Capstan is aligned to the Hole(B) of the Gear Cam.  
(Refer to above Fig. A-7-4).

# DECK MECHANISM DISASSEMBLY

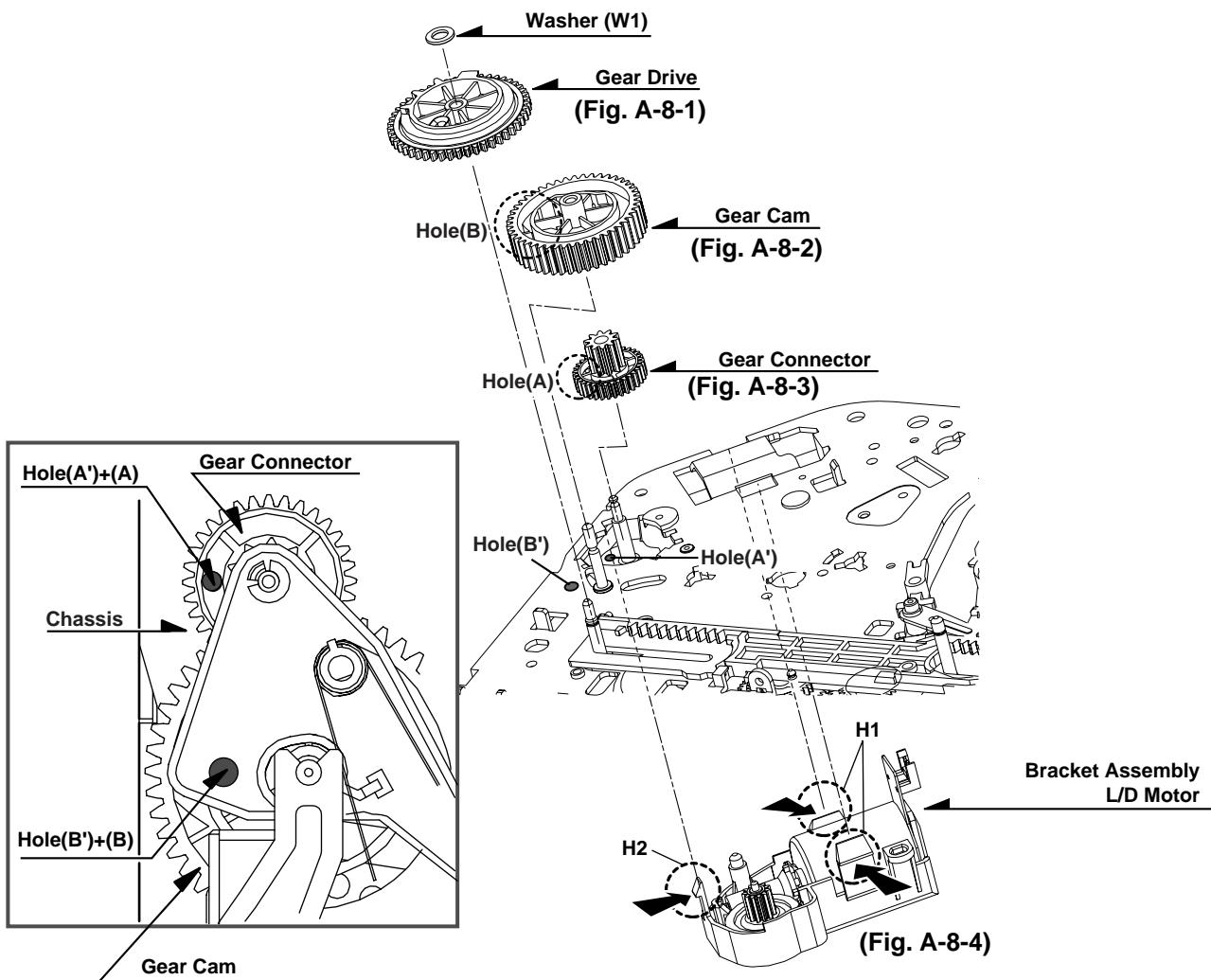


Fig. A-8

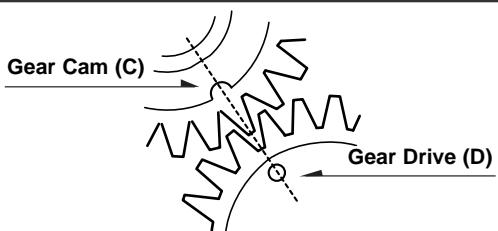
## 27. Gear Drive (Fig. A-8-1)/ Gear Cam (Fig. A-8-2)/ Gear Connector (Fig. A-8-3)

- 1) Remove the Washer(W1) and lift up the Gear Drive.
- 2) Lift up the Gear Cam.
- 3) Lift up the Gear Connector.

### NOTE

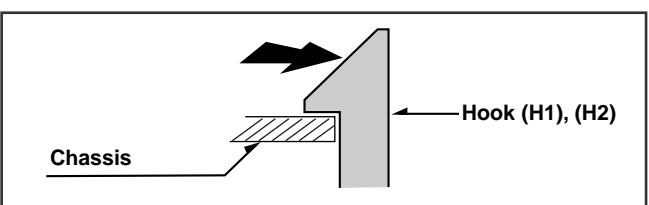
- (1) When reassembling, confirm that the Hole (A) of the Gear Connector is aligned to the Hole (A') of the Chassis (Fig. A-8-3).
- (2) When reassembling, confirm that the Hole (B) of the Gear Cam is aligned to the Hole (B') of the Chassis (Fig. A-8-2).
- (3) When reassembling, confirm that the (C) part of the Gear Cam is aligned to the (D) part of the Gear Drive as shown Fig. B-3

(Fig. B-3)



## 28. Bracket Assembly L/D Motor (Fig. A-8-4)

- 1) Unhook the three Hooks(H1),(H2) and push down the Bracket Assembly L/D Motor.



# DECK MECHANISM DISASSEMBLY

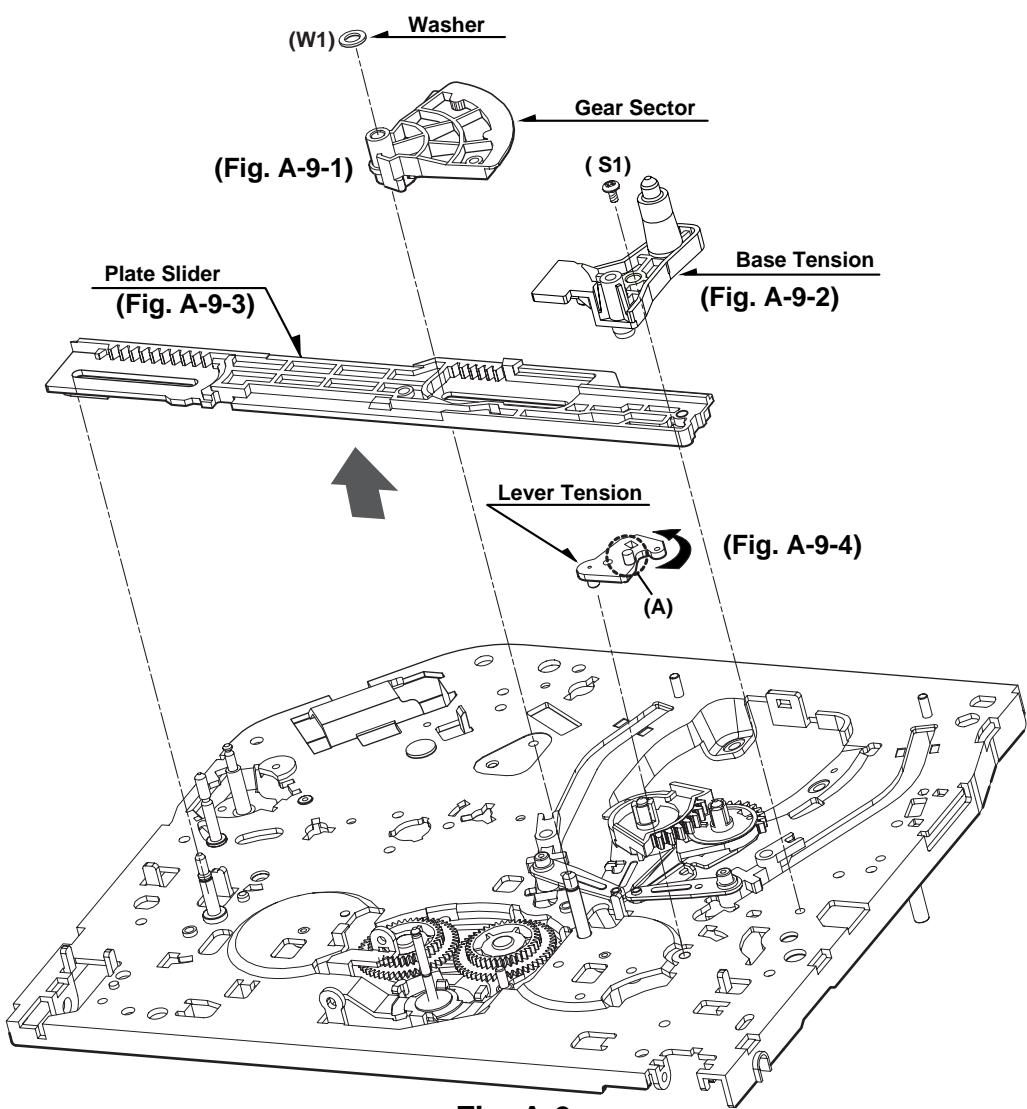


Fig. A-9

## 29. Gear Sector (Fig. A-9-1)

- 1) Remove the Washer(W1) and lift up the Gear Sector.

### NOTE

## 30. Base Tension (Fig. A-9-2)/

### Plate Slider (Fig. A-9-3)/

### Lever Tension (Fig. A-9-4)

- 1) Remove the Screw(S1) and lift up the Base Tension.
- 2) Lift up the Plate Slider.
- 3) Hold the (A) Part of the Lever Tension and turn to the counterclockwise direction, and then lift up the Lever Tension.

- (1) When reassembling, turn the Lever Tension to the clockwise direction in maximum.

# DECK MECHANISM DISASSEMBLY

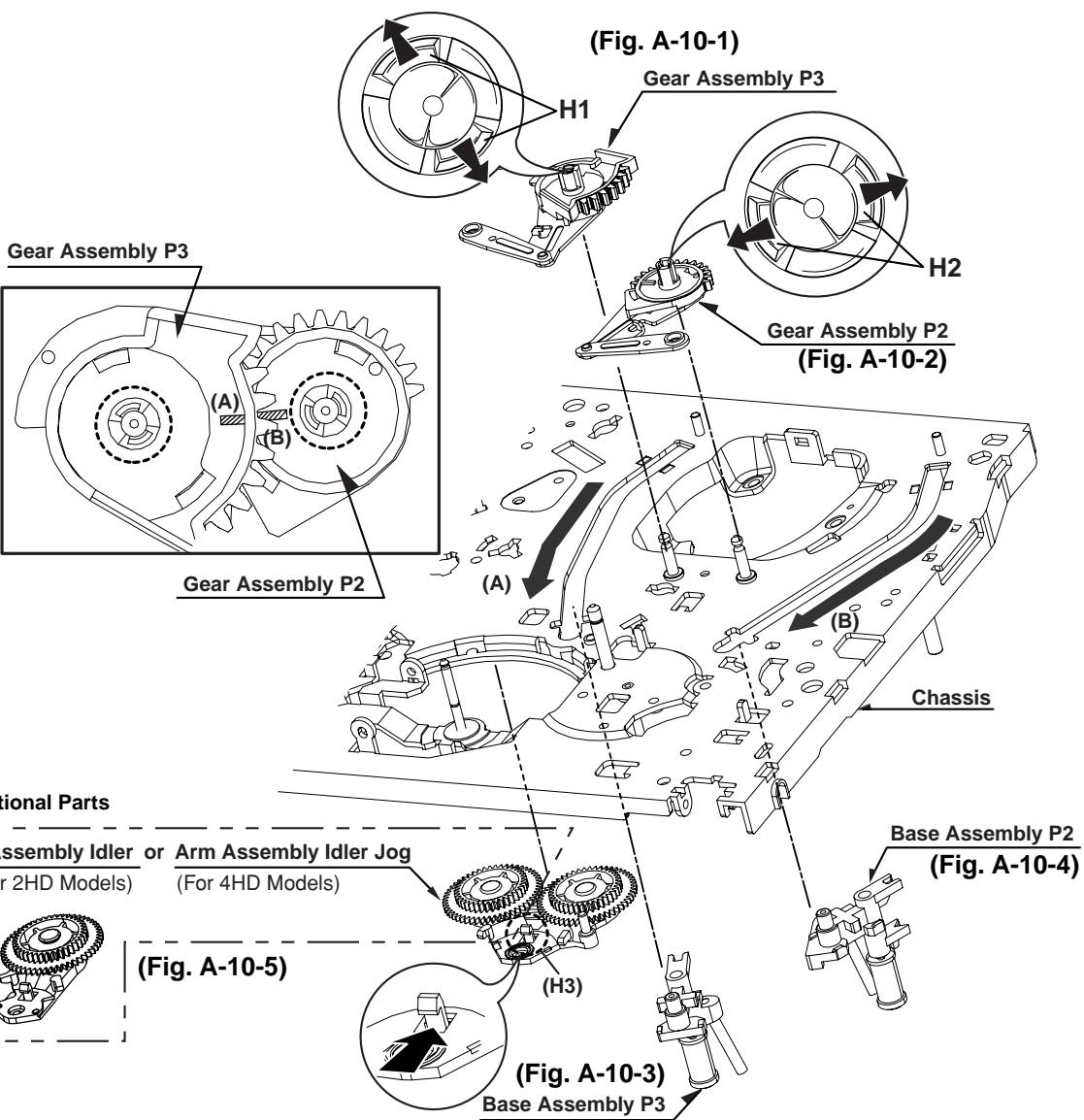


Fig. A-10

## 31. Gear Assembly P3 (Fig. A-10-1)

### Gear Assembly P2 (Fig. A-10-2)

- 1) Unhook the two Hooks(H1) and lift up the Gear Assembly P3.
- 2) Unhook the two Hooks(H2) and lift up the Gear Assembly P2.

#### NOTE

- 1) Arm Assembly Idler Jog is for 4HD Models.
- 2) Arm Assembly Idler is for 2HD Models.

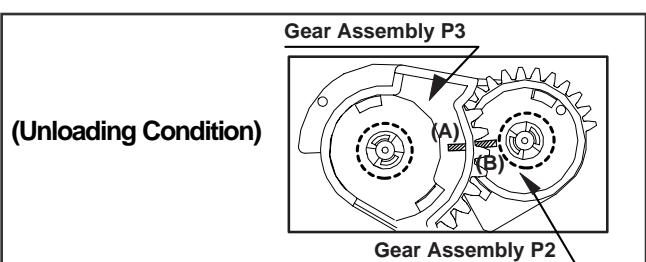
## 32. Base Assembly P3 (Fig. A-10-3)

### Base Assembly P2 (Fig. A-10-4)

- 1) Move the Base Assembly P3 in the direction of the arrow of the Chassis Hole(A) and push down the Base Assembly P3.
- 2) Move the Base Assembly P2 in the direction of the arrow of the Chassis Hole(B) and push down the Base Assembly P2.

#### NOTE

- 1) When reassembling, confirm that the (A) Part of the Gear Assembly P3 is aligned to the (B) Part of the Gear Assembly P2 as shown below.

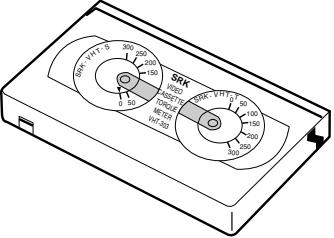
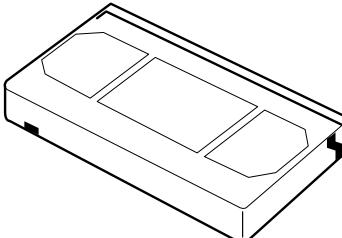
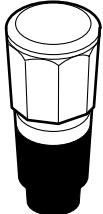


## 33. Arm Assembly Idler Jog or Arm Assembly Idler (Fig. A-10-5)

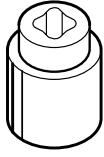
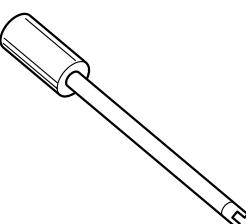
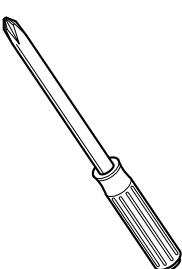
- 1) Unhook the Hook(H3) and push down the Arm Assembly Idler Jog.

# DECK MECHANISM ADJUSTMENT

## • Tools and Fixtures for Service

1. Cassette Torque meter SRK-VHT-303(Not SVC part)	2. Alignment tape (See figure below)	3. Torque gauge 600g.Cm ATG
		

4. Torque gauge adaptor	5. Post height adjusting driver Parts No: SV-TGO-030-000 (SMALL) SV-TGO-020-000 (LARGE)	6. + Type driver (ø 5)
		

## ALIGNMENT TAPES FOR ADJUSTMENT

Derivation No.	A	B	C	D
Mechanism	PAL	PAL	NTSC	NTSC
	SP/LP 2/4 Head	SP 2 Head	SP/LP/EP 2/4 Head	SP 2 Head
FM Envelope	TTV-P2L	TTV-P2	TTV-N1 (TTV-N12)	TTV-N2
A/C Head	Slantness	A commercially available tape		
	Height	TTV-P1 (TTV-P1L)	TTV-P1	TTV-N1 (TTV-N12) (TTV-N1E)
	Azimuth	TTV-P2	TTV-P2	TTV-N2
X-value	TTV-P2 (TTV-P2L)	TTV-P2	TTV-N2 TTV-N2E TTV-N12	TTV-N2
RG Post Inclination	A commercially available tape			
Tape Back Tension	SRK-VHT-303			

The numbers in ( ) parenthesis can be used as the substitute.

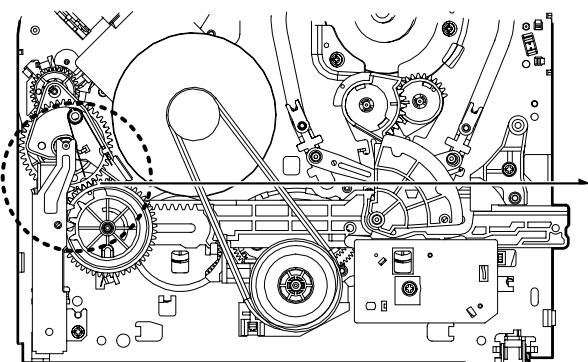
# DECK MECHANISM ADJUSTMENT

## 1. Mechanism Alignment Position Check

**Purpose:** To determine if the Mechanism is in the correct position, when a Tape is ejected.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Check Point
• Blank tape	• Eject Mode (with Cassette ejected)	• Mechanism and Mode Switch Position
1) Turn the Power S/W on and eject the Cassette by pressing the Eject Button. 2) Remove the Top Cover and Plate Assembly Top, visually check if the Gear Cam Hole is aligned with the Chassis Hole as below Fig. C-2. 3) If not, rotate the Shaft of the Loading Motor to either Clockwise or Counterclockwise until the Alignment is as below Fig. C-2. 4) Remove the Screw which fixes the Deck Mechanism and Main Frame and confirm if the Gear Cam is aligned with		the Gear Drive as below Fig. C-1(A). 5) Confirm if the Mode S/W on the Main P.C.Board is aligned as below Fig. C-1(B). 6) Remount the Deck Mechanism on the Main P.C.Board and check each operation.

### CHECK DIAGRAM



BOTTOM VIEW

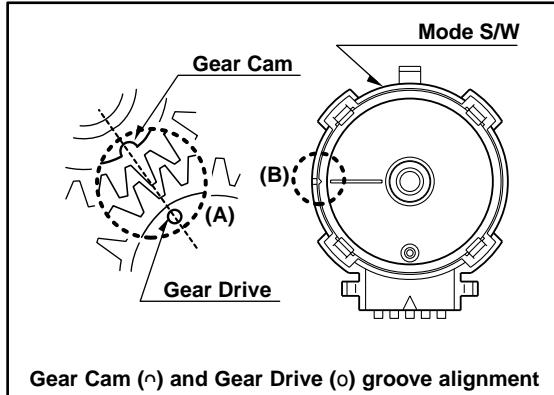
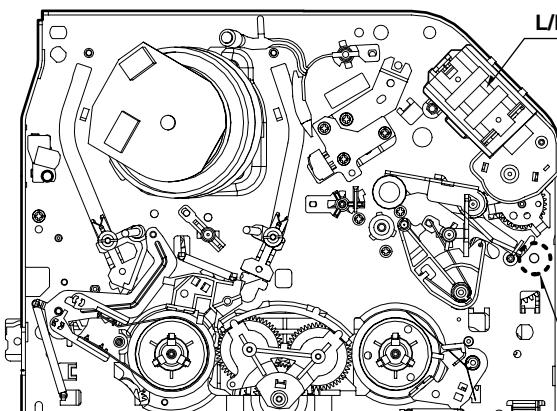


Fig. C-1



TOP VIEW

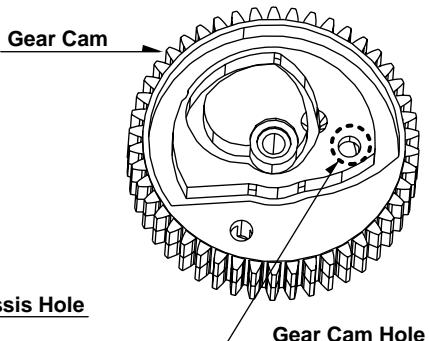


Fig. C-2

# DECK MECHANISM ADJUSTMENT

## 2. Preparation for Adjustment (To set the Deck Mechanism to the Loading state without inserting a Cassette Tape).

- 1) Unplug the Power Cord from the AC Outlet.
- 2) Disassemble the Top Cover and Plate Assembly Top.
- 3) Plug the Power Cord into the AC Outlet.
- 4) Turn the Power S/W on and push the Lever Stopper (L),(R) of the Holder Assembly CST to the back for Loading the

Cassette without Tape.

Cover the Holes of the End Sensors at the both sides of the Bracket Side(L) and Bracket Assembly Door to prevent a light leak.

Then The Deck Mechanism drives to the Stop Mode.

In this case, The Deck Mechanism can accept inputs of each mode, however the Rewind and Review Operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

## 3. Checking Torque

**Purpose:** To insure smooth Transport of the Tape during each Mode of Operation.

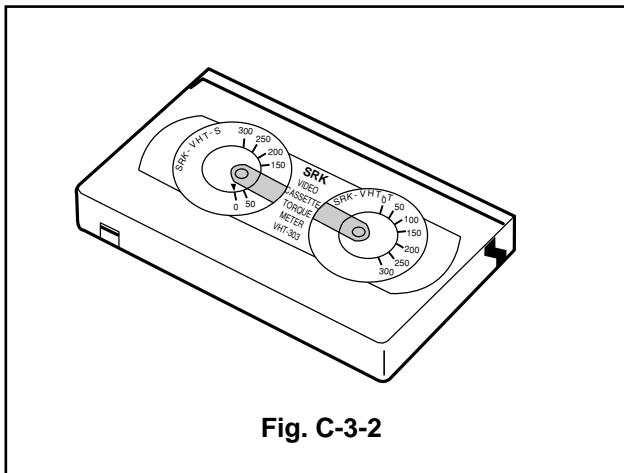
If the Tape Transport is abnormal, then check the Torque as indicated by the chart below.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Checking Method		
<ul style="list-style-type: none"> <li>• Torque Gauge(600g/cm ATG)</li> <li>• Torque Gauge Adaptor</li> <li>• Cassette Torque Meter SRK-VHT-303</li> </ul>	<ul style="list-style-type: none"> <li>• Play (FF) or Review (REW) Mode</li> </ul>	<ul style="list-style-type: none"> <li>• Perform each Deck Mechanism Mode without inserting a Cassette Tape(Refer to above No.2 Preparation for Adjustment).</li> <li>• Read the Measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2).</li> <li>• Attach the Torque Gauge Adaptor to the Torque Gauge and then read the Value of it(Fig. C-3-1).</li> </ul>		
Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	75~115g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	130~200g/m

### NOTE:

The Values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed.

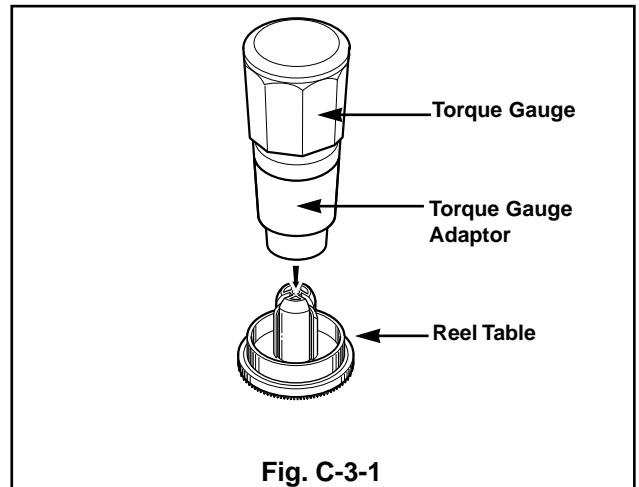
### • Cassette Torque Meter (SRK-VHT-303)



### NOTE:

The Torque reading to measure occurs when the Tape abruptly changes direction from Fast Forward or Rewind Mode, when quick bracking is applied to both Reels.

### • Torque Gauge (600g.cm ATG)



# DECK MECHANISM ADJUSTMENT

## 4. Guide Roller Height Adjustment

**Purpose:** To regulate the Height of the Tape so that the Bottom of the Tape runs along the Tape Guide Line on the Lower Drum.

### 4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Post Height Adjusting Driver	• Play or Review Mode	• Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.

#### Adjustment Procedure

- 1) Confirm if the Tape runs along the Tape Guide Line of the Lower Drum.
- 2) If the Tape runs the Bottom of the Guide Line, turn the Guide Roller Height Adjustment Screw to Clockwise direction.
- 3) If it runs the Top, turn to Counterclockwise direction.
- 4) Adjust the Height of the Guide Roller to be guided to the Guide Line of the Lower Drum from the Starting and Ending Point of the Drum.

#### ADJUSTMENT DIAGRAM

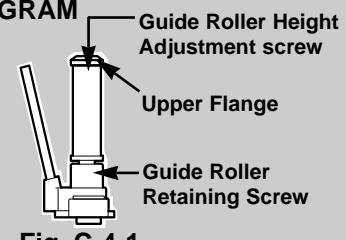


Fig. C-4-1

### 4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
• Oscilloscope • Alignment Tape • Post Height Adjusting Driver	• CH-1:PB RF Envelope • CH-2:NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Point • RF Envelope Output Point	• Play an Alignment Tape	• Guide Roller Height Adjustment Screws

#### Adjustment Procedure

- 1) Play an Alignment Tape after connecting the Probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point.
- 2) Tracking Control(in PB Mode) : Center Position(When this Adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum).
- 3) Height Adjustment Screw : Flatten the RF Waveform. (Fig. C-4-2)
- 4) Turn(Move) the Tracking Control(in PB Mode) Clockwise and Counterclockwise.(Fig. C-4-3)
- 5) Check that any Drop of RF Output is uniform at the Start and End of the Waveform.

#### Waveform Diagrams

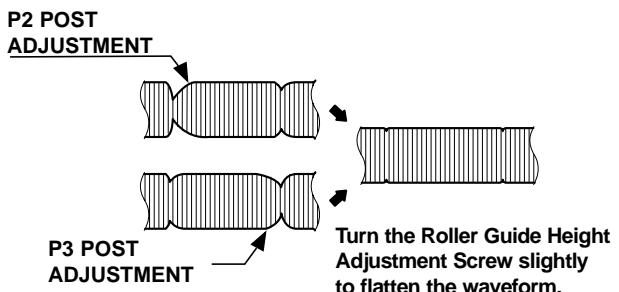


Fig. C-4-2

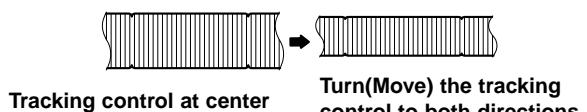
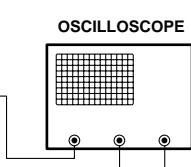


Fig. C-4-3

#### Connection Diagram

RF ENVELOPE OUTPUT TEST POINT  
HEAD SWITCHING OUTPUT TEST POINT



#### NOTE

If the adjustment is excessive or insufficient the tape will jam or fold.

# DECK MECHANISM ADJUSTMENT

## 5. Audio/Control (A/C) Head Adjustment

**Purpose:** To insure that the Tape passes accurately over the Audio and Control Tracks in exact Alignment in both the Record and Playback Modes.

### 5-1. Preliminary Adjustment (Height and Tilt Adjustment)

Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> <li>• Blank Tape</li> <li>• Screw Driver(+) Type 5mm</li> </ul>	<ul style="list-style-type: none"> <li>• Play the blank tape</li> </ul>	<ul style="list-style-type: none"> <li>• Tilt Adjustment Screw(C)</li> <li>• Height Adjustment Screw(B)</li> <li>• Azimuth Adjustment Screw(A)</li> </ul>

### Adjustment Procedure/Diagrams

- 1) Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).
- 2) Play a Blank Tape and observe if the Tape passes accurately over the A/C Head without Tape Curling or Folding.
- 3) If Folding or Curling is occurred then adjust the Tilt Adjustment Screw(C) while the Tape is running to resemble Fig. C-5-3.

- 4) Reconfirm the Tape Path after Playback about 4~5 seconds.

#### NOTE

Ideal A/C head height occurs, when the tape runs between 0.2~0.25mm above the bottom edge of the A/C head core.

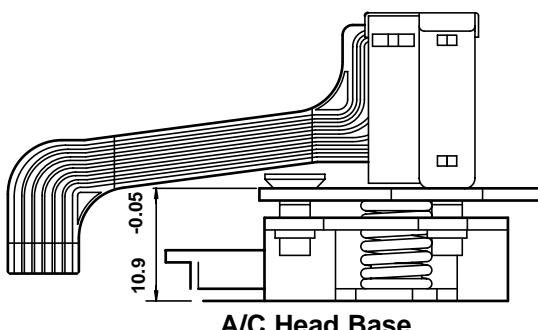


Fig. C-5-1

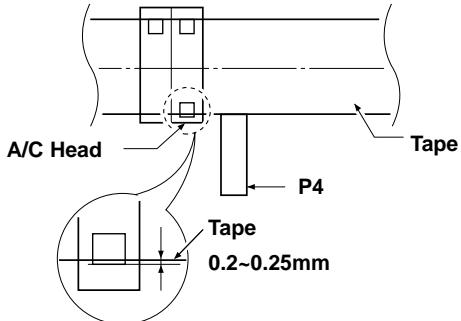
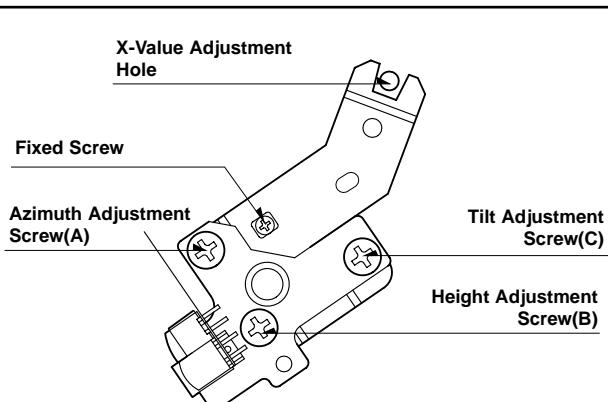


Fig. C-5-3



A/C Head Assembly

Fig. C-5-2

# DECK MECHANISM ADJUSTMENT

## 5-2. Confirm that the Tape passes smoothly between the Take-up Guide and Pinch Roller(using a Mirror or the naked eye).

- After completing Step 5-1.(Preliminary Adjustment), check that the Tape passes around the Take-up Guide and Pinch Roller without Folding or Curling at the Top or Bottom.
  - If Folding or Curling is observed at the Bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the Clockwise direction.
  - If Folding or Curling is observed at the Top of it then

slowly turn the Tilt Adjustment Screw(C) in the Counterclockwise direction.

### NOTE:

Check the RF Envelope after adjusting the A/C Head, if the RF Waveform differs from Fig. C-5-4, performs Precise Adjustment to flat the RF Waveform.

## 5-3. Precise Adjustment (Azimuth adjustment)

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> <li>Oscilloscope</li> <li>Alignment Tape(SP)</li> <li>Screw Driver(+) Type 5mm</li> </ul>	<ul style="list-style-type: none"> <li>Audio output jack</li> </ul>	<ul style="list-style-type: none"> <li>Play an Alignment Tape 1KHz, 7KHz Sections</li> </ul>	<ul style="list-style-type: none"> <li>Azimuth Adjustment Screw(A)</li> <li>Height Adjustment Screw(B)</li> </ul>
<b>Adjustment Procedure</b>			
<ol style="list-style-type: none"> <li>Connect the Probe of the Oscilloscope to Audio Output Jack.</li> <li>Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for Maximum Output of the 1Khz and 7Khz segments, while maintaining the flattest Envelope differential between the two Frequencies.</li> </ol>			

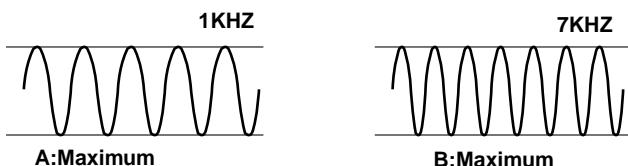


Fig. C-5-4

## 6. X-Value Adjustment

Purpose: To obtain compatibility with other VCR(VCP) Models.			
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> <li>Oscilloscope</li> <li>Alignment tape(SP only)</li> <li>Screw Driver(+) Type 5mm</li> </ul>	<ul style="list-style-type: none"> <li>CH-1: PB RF Envelope</li> <li>CH-2: NTSC: SW 30Hz PAL: SW 25Hz</li> <li>Head Switching Output Test Point</li> <li>RF Envelope Output Test Point</li> </ul>	<ul style="list-style-type: none"> <li>Play an Alignment Tape</li> </ul>	
<b>Adjustment Procedure</b>		<b>Adjustment Diagram</b>	
<ol style="list-style-type: none"> <li>Insert the alignment tape, and press the + or - manual tracking (channel) button once while "AUTO TRACKING" is flashing on the screen to release auto tracking, and then center the tracking.</li> <li>Run the tape long enough for tracking to complete one cycle.</li> <li>Loosen the fixing screw, and move the A/C head base assembly in the direction shown in the diagram, to find the center of the peak so that the maximum envelope is available. With this method, the 31-<math>\mu</math>m head can trace on the center of 58-<math>\mu</math>m track.</li> <li>Tighten the A/C head base assembly fixing screw.</li> </ol>			
		<b>Connection Diagram</b>	

# DECK MECHANISM ADJUSTMENT

## 7. Adjustment after Replacing Drum Assembly (Video Heads)

**Purpose:** To correct for shift in the Roller Guide and X value after replacing the Drum.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
<ul style="list-style-type: none"> <li>• Oscilloscope</li> <li>• Alignment tapes</li> <li>• Blank Tape</li> <li>• Post Height Adjusting Driver</li> <li>• Screw Driver(+) Type 5mm</li> </ul>	<ul style="list-style-type: none"> <li>• CH-1: PB RF Envelope</li> <li>• CH-2: NTSC: SW 30Hz PAL: SW 25Hz</li> <li>• Head Swithching Output Test Point</li> <li>• RF Envelope Output Test Point</li> </ul>	<ul style="list-style-type: none"> <li>• Play the blank tape</li> <li>• Play an alignment tape</li> </ul>	<ul style="list-style-type: none"> <li>• Guide Roller Precise Adjustment</li> <li>• Switching Point</li> <li>• Tracking Preset</li> <li>• X-Value</li> </ul>
<b>Checking/Adjustment Procedure</b>		<p>Play a blank tape and check for tape curling or creasing around the roller guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".</p>	
		<p><b>Connection Diagram</b></p> <p><b>Waveform</b></p> <p>V1/V MAX <math>\leq</math> 0.7 V2/V MAX <math>\leq</math> 0.8 RF ENVELOPE OUTPUT</p>	

Fig. C-7

## 8. Check the Tape Travel after Reassembling Deck Assembly.

### 8-1. Check Audio and RF Locking Time during playback and after CUE or REV (FF/REW)

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> <li>• Oscilloscope</li> <li>• Alignment tapes(with 6H 3kHz Color Bar Signal)</li> <li>• Stop Watch</li> </ul>	<ul style="list-style-type: none"> <li>• RF Locking Time: Less than 5 sec.</li> <li>• Audio Locking Time: Less than 10sec</li> </ul>	<ul style="list-style-type: none"> <li>• CH-1: PB RF Envelope</li> <li>• CH-2: Audio Output</li> <li>• RF Envelope Output Point</li> <li>• Audio Output Jack</li> </ul>	<ul style="list-style-type: none"> <li>• Play an alignment tape (with 6H 3kHz Color Bar Signal)</li> </ul>
<b>Checking Procedure</b>		<p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>1) CUE is fast forward mode (FF)</li> <li>2) REV is the rewind mode (REW)</li> <li>3) Referenced to the Play mode</li> </ol>	

### 8-2. Check for tape curling or jamming

Test Equipment/ Fixture	Specification	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> <li>• T-160 Tape</li> <li>• T-120 Tape</li> </ul>	<ul style="list-style-type: none"> <li>• Be sure there is no tape jamming or curling at the begining, middle or end of the tape.</li> </ul>	<ul style="list-style-type: none"> <li>• Run the CUE, REV play mode at the beginning and the end of the tape.</li> </ul>
<b>Checking Procedure</b>		<ol style="list-style-type: none"> <li>1) Confirm that the tape runs smoothly around the roller guides, drum and A/C head assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the begining, middle and end sections of the cassette.</li> <li>2) Confirm that the tape passes over the A/C head assembly as indicated by proper audio reproduction and proper tape counter performance.</li> </ol>

# MAINTENANCE/INSPECTION PROCEDURE

## 1 Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Phenomenon	Inspection	Replace- ment
Color beats	Dirt on full-erase head	o
Poor S/N, no color	Dirt on video head	o
Vertical or Horizontal jitter	Dirt on video head Dirt on tape transport system	o
Low volume, Sound distorted	Dirt on Audio/control head	o
Tape does not run. Tape is slack	Dirt on pinch roller	o
In Review and Unloading (off mode), the Tape is rolled up loosely.	Clutch Ass'y S27 Torque reduced  Cleaning Drum and transport system	o Fig. C-9-3

### NOTE

If locations marked with **o** do not operate normally after cleaning, check for wear and replace.

See the EXPLODED VIEWS at the end of this manual as well as the above illustrations. See the Greasing (Page 79) for the sections to be lubricated and greased.

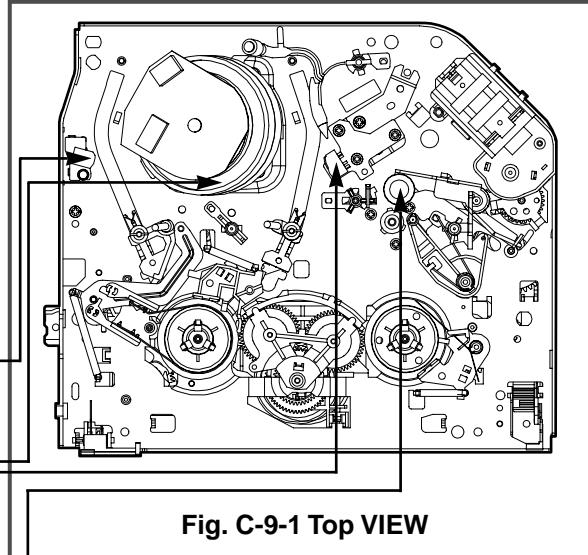


Fig. C-9-1 Top VIEW

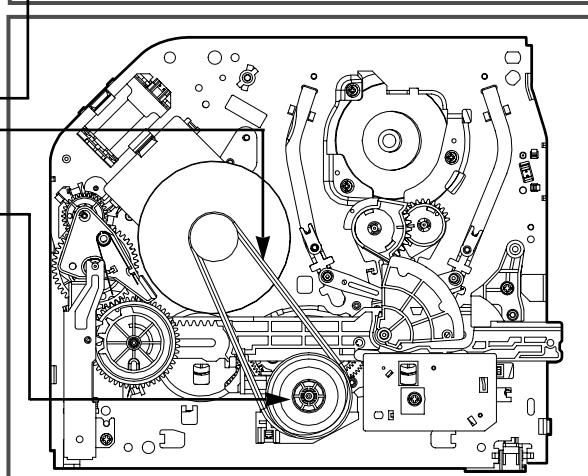


Fig. C-9-2 BOTTOM VIEW

\* No. (1)~(13) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.

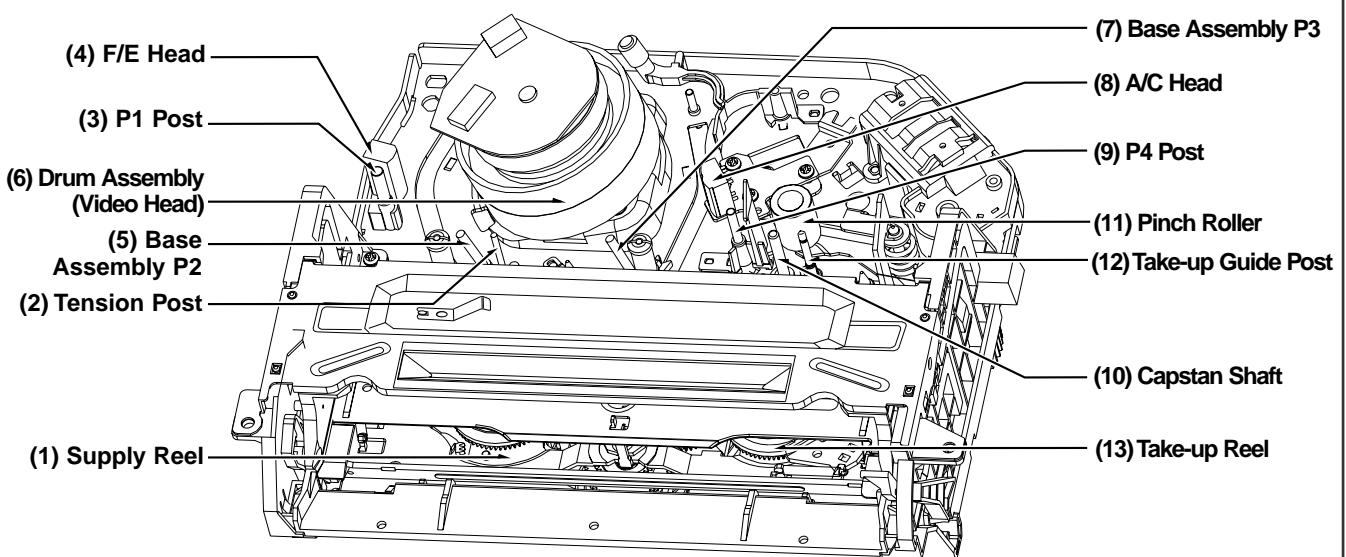


Fig. C-9-3 Tape Transport System

# MAINTENANCE/INSPECTION PROCEDURE

## 2. Required Maintenance

The recording density of a VCR(VCP) is much higher than that of an audio tape recorder. VCR(VCP) components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, is necessary.

## 3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.

But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary	About 1 year	About 18 months	About 3 years
Average hours used per day			
One hour			
Two hours			
Three hours			

## 4. Supplies Required for Inspection and Maintenance

- (1) Grease : Kanto G-311G (Blue) or equivalent
- (2) Isopropyl Alcohol or equivalent
- (3) Cleaning Patches
- (4) Grease : Kanto G-381(Yellow) : Used only for Reel S and Reel T

## 5) Maintenance Procedure

### 5-1) Cleaning

#### (1) Cleaning video head

First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.

(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)

Thoroughly dry the head. Then run the test tape. If Isopropyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.

#### (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isopropyl Alcohol.

### NOTES:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
- ② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no that force is that would cause deforming or damage applied to the system.

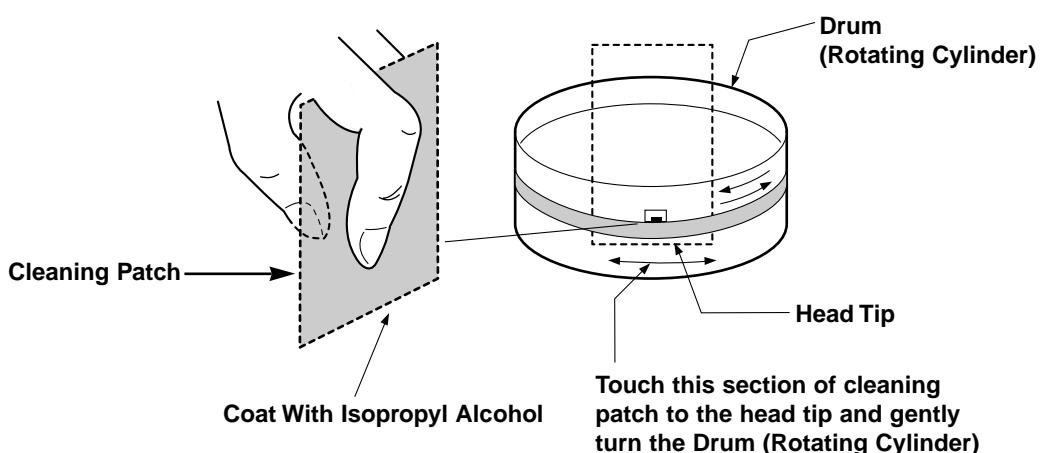


Fig. C-9-4

# MAINTENANCE/INSPECTION PROCEDURE

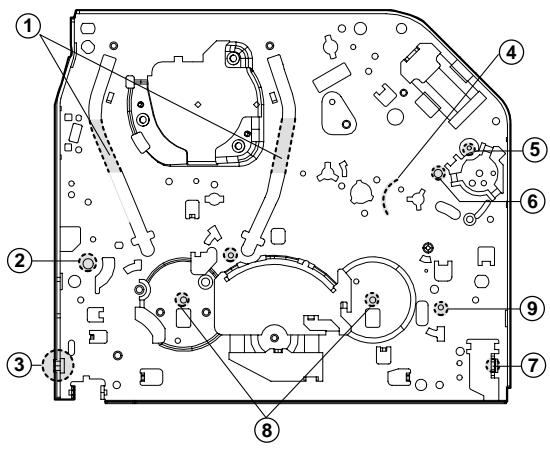
## 5-2) Greasing

### (1) Greasing guidelines

Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with cleaning patch wetted in Isopropyl Alcohol.

### NOTE:Greasing Points

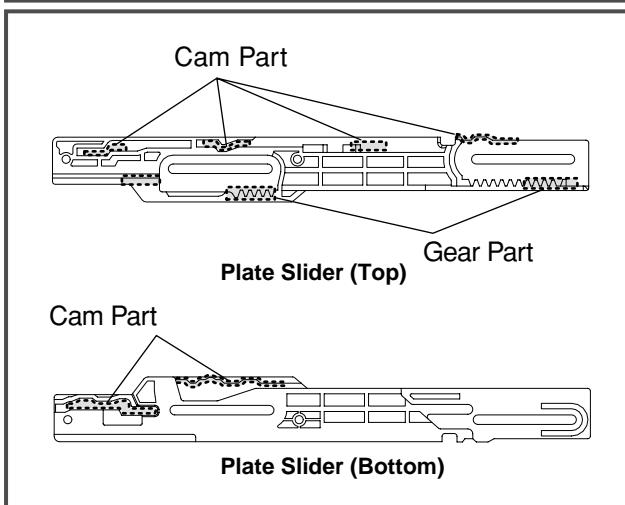
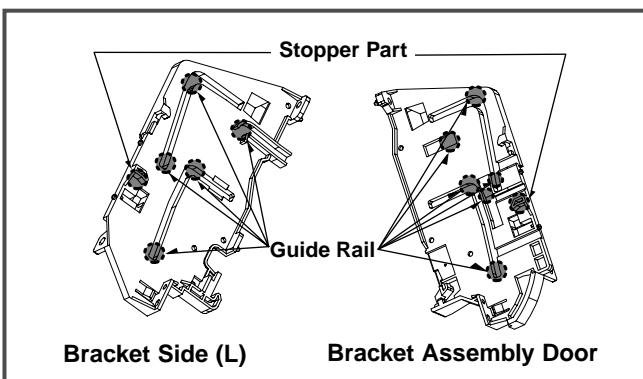
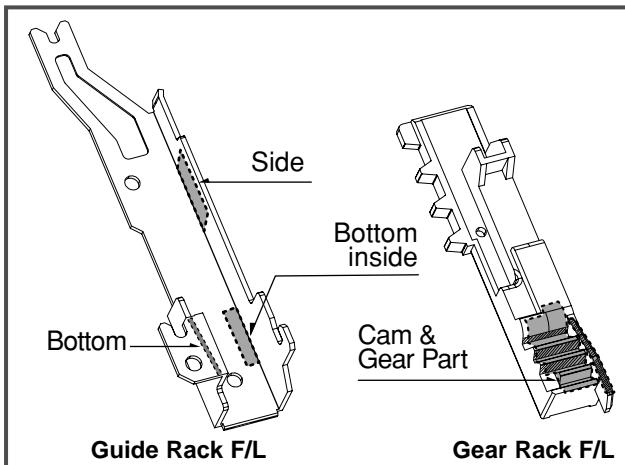
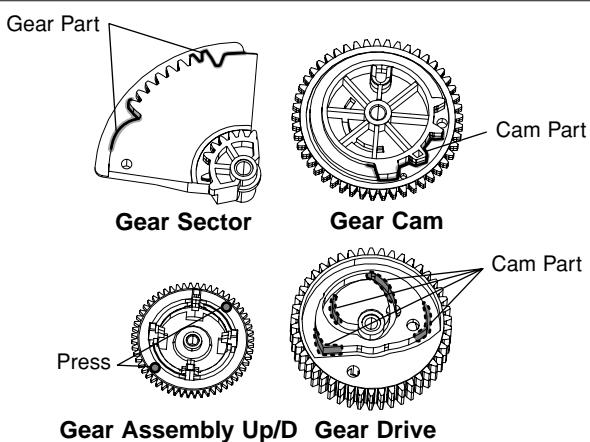
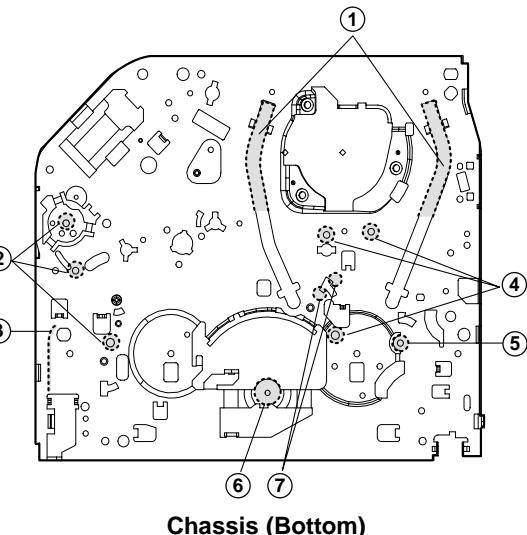
1) Loading Path Inside & Top side	6) Shaft
2) Base Tension Boss inside Hole	7) Arm Assembly F/L of Buming Inside Hole
3) Arm Assembly F/L "U" Groove	8) Reel S, T Shaft (G381:Yellow)
4) Arm Take-up Rubbing Section	9) Brake T Groove
5) L/D Motor Worm Wheel Part	



### (2) Periodic greasing

Grease specified locations every 5,000 hours.

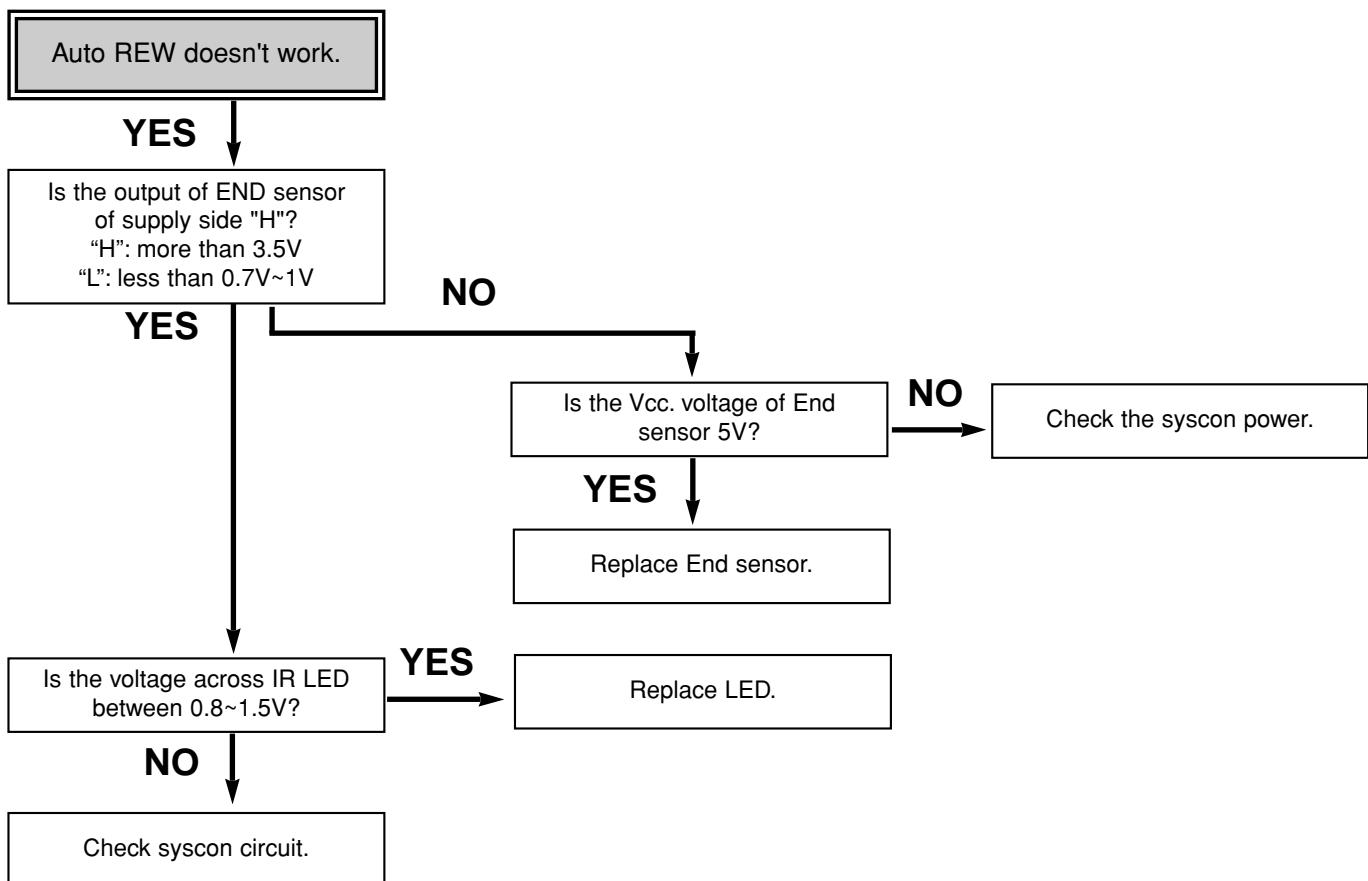
1) Loading Path Inside & Top side	5) Lever Tension Groove
2) Shaft	6) Clutch Assembly D33 Shaft
3) Gear Rack F/L Moving Section	7) Brake "S" Rubbing Section
4) Shaft	



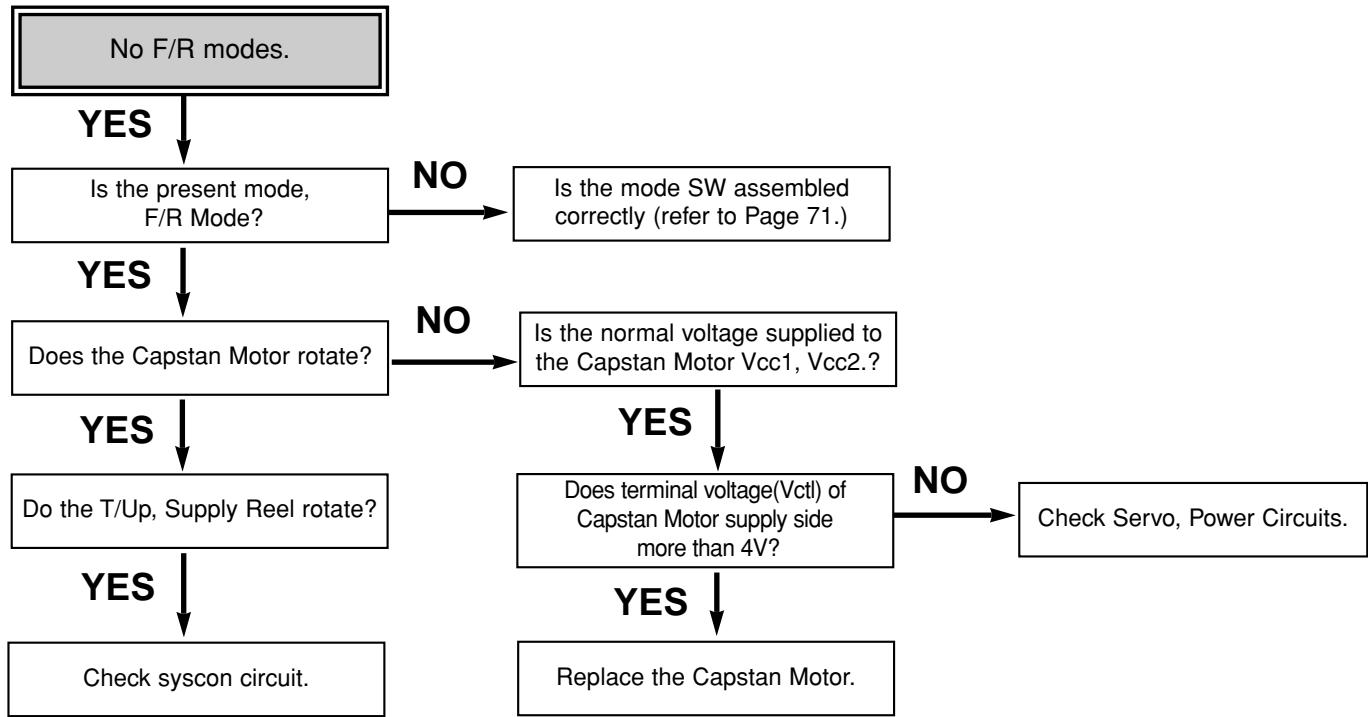
# MECHANISM TROUBLESHOOTING GUIDE

## 1. Deck Mechanism

A.

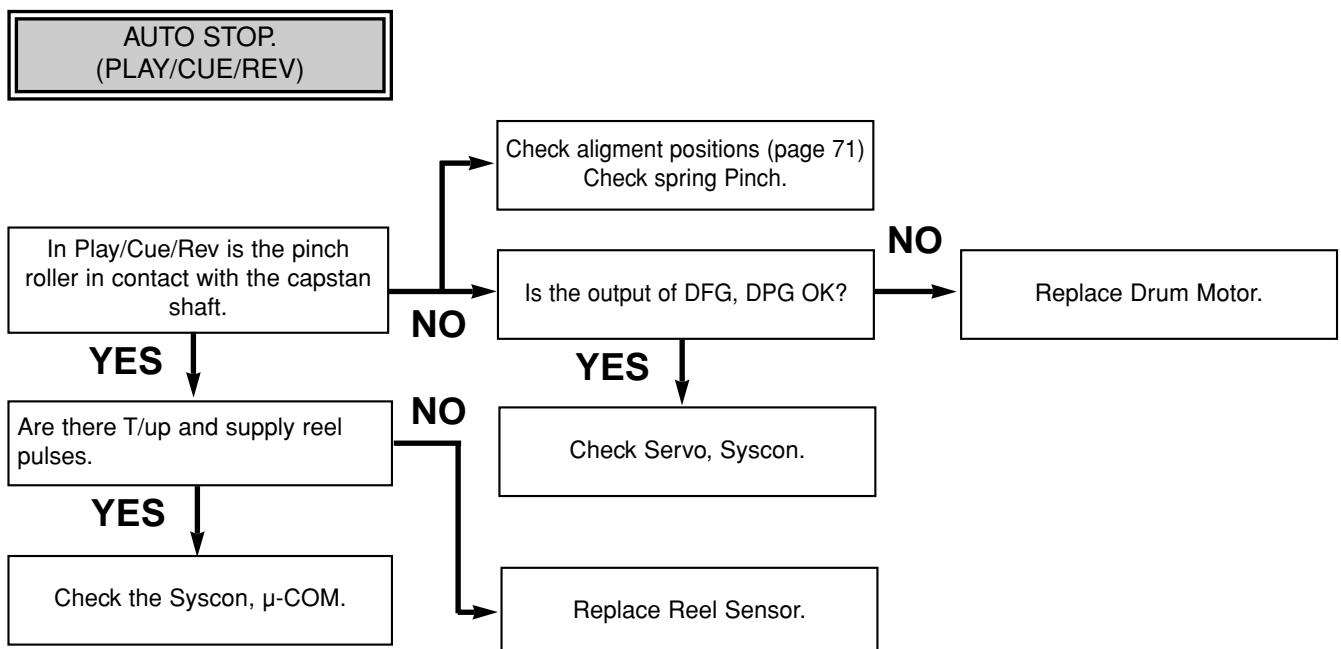


B.

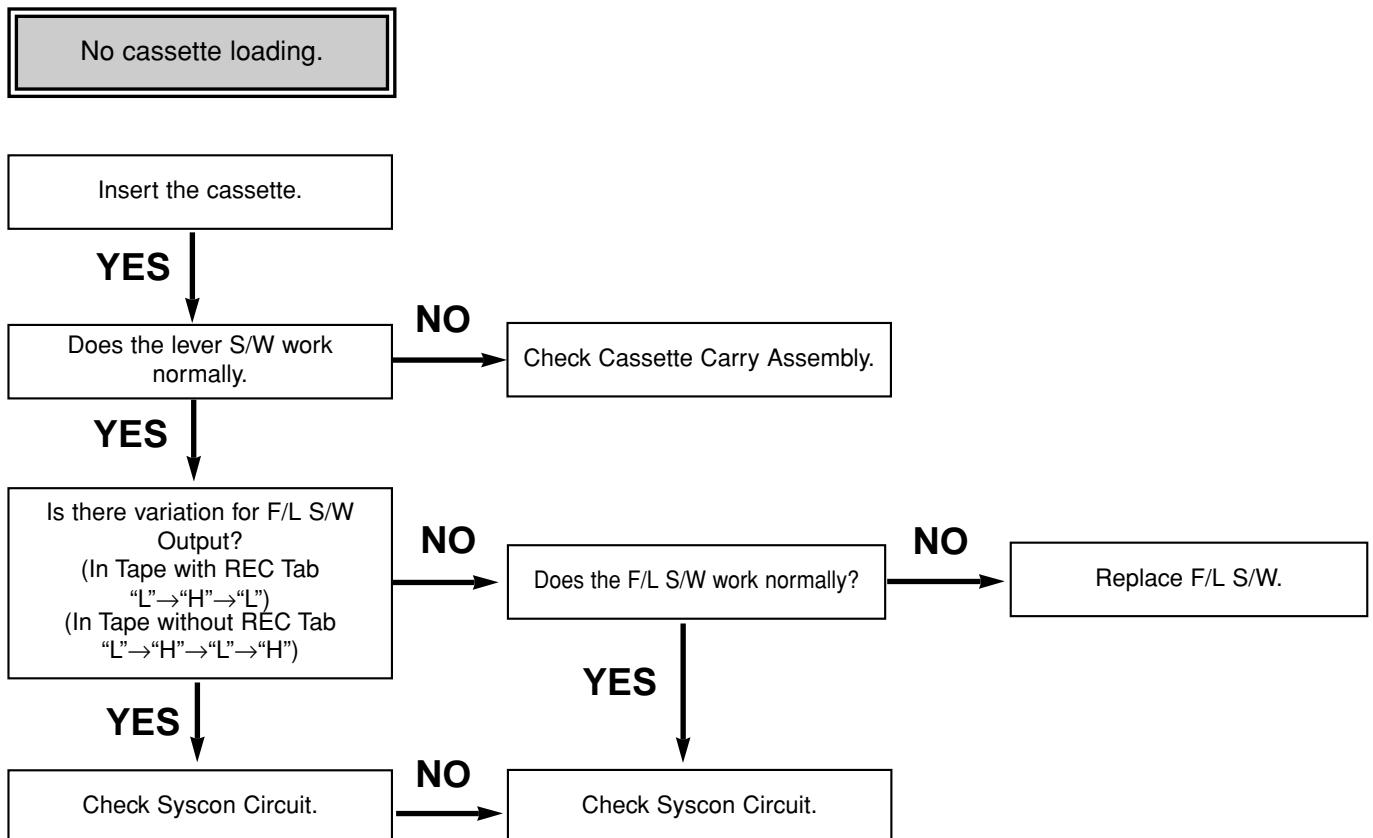


# MECHANISM TROUBLESHOOTING GUIDE

C.

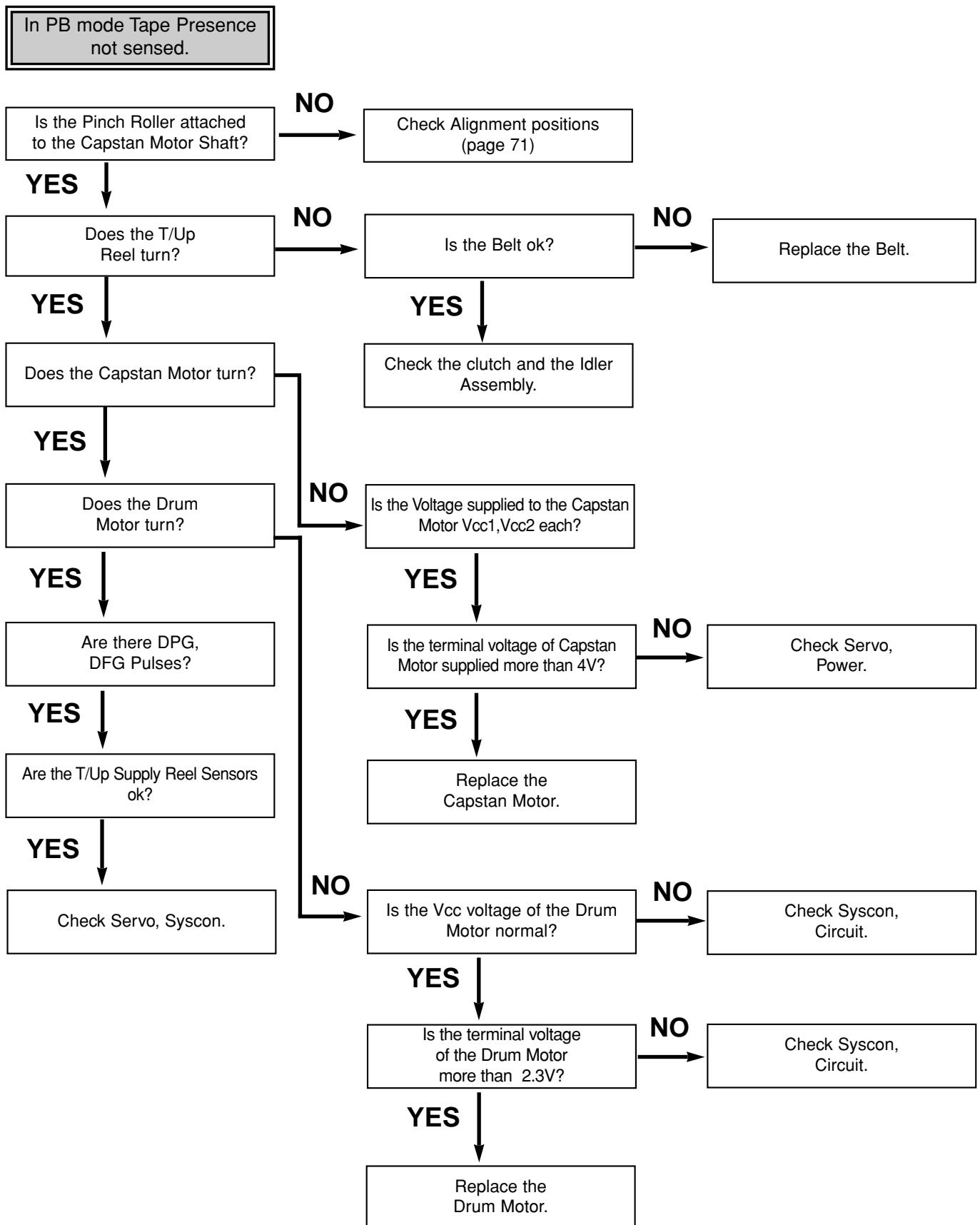


D.



# MECHANISM TROUBLESHOOTING GUIDE

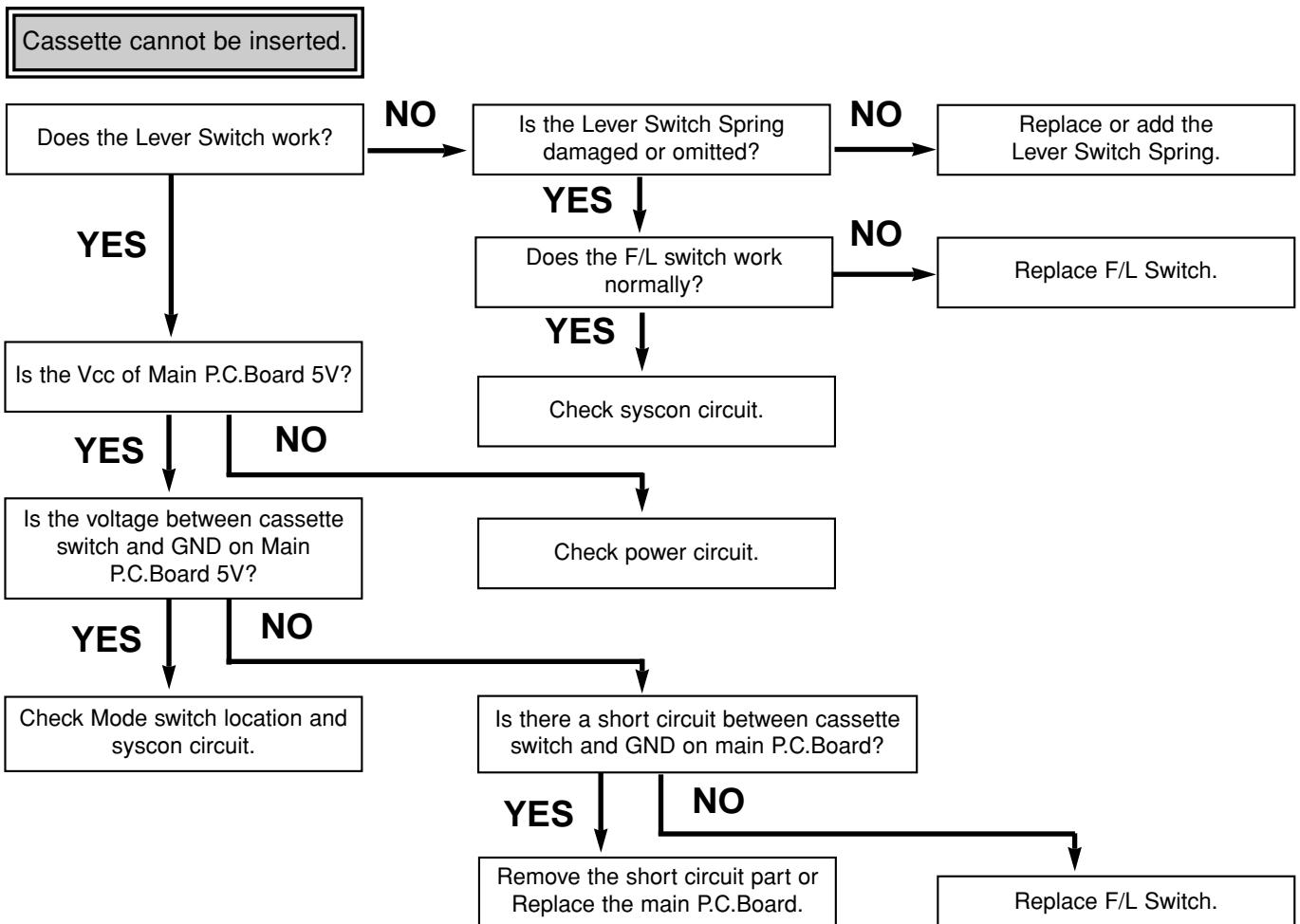
E.



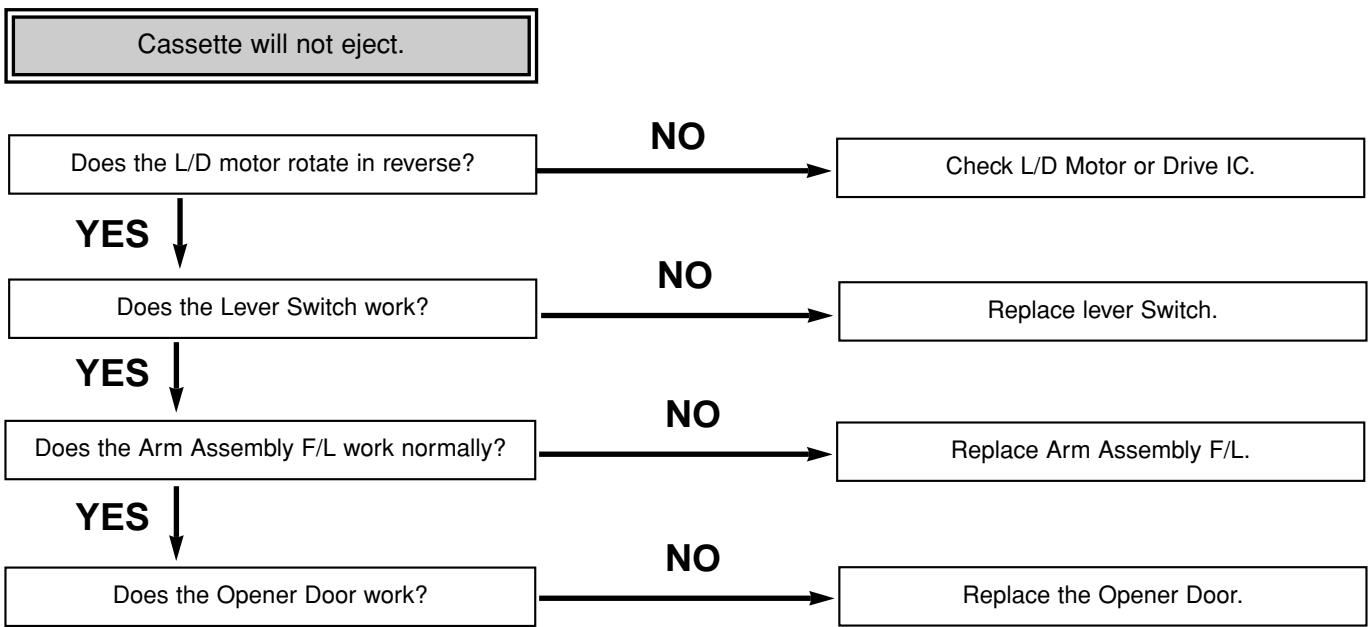
# MECHANISM TROUBLESHOOTING GUIDE

## 2. Front Loading Mechanism

A.



B.



# MECHANISM TROUBLESHOOTING GUIDE

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C.

